APPLICATION OF OINTMENTS TO INTERNAL CAVITIES BY THE AID OF COLLAPSIBLE TUBES.

This method of treatment having become largely adopted, we present to the Medical profession a series of Ointments which have been thoroughly tested in the diseases indicated.

For the Urethra two kinds of Catheters are recommended :—

Fig. 1,

For GONORRHŒA and URETHRITIS.

1st.—For recent cases. A Stiff Vulcanite Catheter (*Fig.* 1) is preferred (with this instrument we supply three Catheters, and it is advisable that the largest that can be passed without pain be used).

For GLEET and Long-standing Cases of GONORRHŒA.

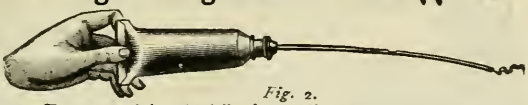


Fig. 2.

and.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Ointment Tubes containing the following medicaments :—

1. Iodoform & Eucalyptus
2. Do. do. do. & Cocaine
3. Thallin
4. Do. and Cocaine
5. Iodoform, Eucalyptus & Perchloride of Mercury
6. Dermatol
7. Aristol
8. Biniodide of Mercury
9. Hydrastin
10. Iodol and Eucalyptus
11. Sulphate of Zinc
12. Permanganate of Zinc
13. Resorcin, Hydrastin & Extract of Belladonna
14. Loretin
15. Protargol

Price complete, 5/- *each* (*with Cocaine*, 6/- *each*).

Ointment Tubes without Catheters, 1/6 *each*; *with Cocaine*, 2/6 *each*; *by post*, 3*d. extra.*

In ordering please specify number of the Ointment Tubes, and also whether the Stiff Vulcanite Catheters or the Long Flexible Stem is required.

For DISEASES of the RECTUM.

Fig. 3.

Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

We prepare the following Ointments—

1. Boric Acid & Glycerine
2. Cocaine and Morphia
3. Ung. Gallæ c. Opio
4. Hamamelis
5. Do. and Cocaine
6. Ung. Conii
7. Ung. Belladonna
8. Chrysarobin, Iodoform and Belladonna
9. Gallic Acid & Belladonna
10. Oxide of Zinc and Boric Acid
11. Perchloride of Iron
12. Acetate of Lead and Belladonna

All the above Tubes complete with Pipe, 1/6 *each, with the exception of those containing Cocaine and Conium, which are* 2/6 *each. By post*, 3*d. extra.*

For DISEASES of the UTERUS.

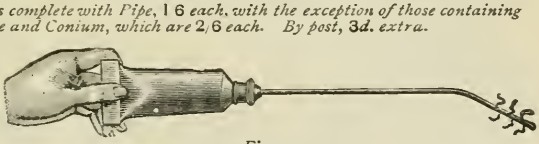


Fig. 4.

The Vulcanite Stem & Ointments have been made at the suggestion of Dr. Duke, Cheltenham.

1. Antiseptic (Iodoform)
2. Do. (Boric Acid)
3. Astringent (Tannic Acid)
4. Escharotic (Chlor. of Zinc)
5. Anodyne (Cocaine and Morphia), *useful in Cancer*

Price of Stem, with Ointment Tube of either Nos. 1, 2, 3 or 4 .. .. each 5s.
" " No. 5 .. .. " 6s.
Spare Collapsible Tubes of Ointment, Nos. 1, 2, 3 and 4 .. .. " 2s.
" " " No. 5 .. .. " 3s.
By Post 3d. extra.

N.B.—We will be pleased to supply Tubes filled according to physicians' own formulæ.

R. SUMNER & CO. Ltd. WHOLESALE AND EXPORT DRUGGISTS, LIVERPOOL.

"ANTISEPTICINE" and Its Preparations.

Registered.

"ANTISEPTICINE" is a non-toxic, non-irritating, and non-escharotic antiseptic, composed of Thyme, Eucalyptol, Peppermint, Gaultheria, and Benzo-Boracic Acid. It has been found most effective in all Catarrhal conditions of the mucous membrane, and an excellent Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhœa and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other fevers, and, in fact, all Zymotic diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price 2s. 6d. per lb.

"ANTISEPTICINE" DUSTING POWDER

Registered.

Is a strong germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative, promoting rapid Cicatrisation and Granulation.

In Dusting Bottles 1s. each, or per lb. 5s.

"ANTISEPTICINE" PASTILLES

Registered.

"ANTISEPTICINE" PASTILLES have been made at the suggestion of a medical man who found the "ANTISEPTICINE" itself so valuable in Throat Affections. Each Pastille contains five minims of the "ANTISEPTICINE."

In Boxes, 6d. each.

Or, in bulk, 2s. 6d. per lb.

"ANTISEPTICINE" TABLETS.

Registered.

For the speedy production of an Antiseptic and Deodorising liquid for irrigation of the nasal, urethral, and vaginal passages, or Lotion for ulcerated throat, etc.

One Tablet is sufficient to make 10-oz. of Antiseptic Lotion.

Boxes containing 50, 1s. each.

"ANTISEPTICINE" SUPER-FATTED SOAP IN POWDER.

Registered.

A powerful Antiseptic Soap, useful in various parasitical Skin Affections, and also refreshing as a Toilet Soap.

The Powder is a most convenient method for local application.

In Sprinkler Bottles, 8/- doz.; Bulk, 2/- per lb.

MANUFACTURED BY

R. SUMNER & CO., Ltd., *WHOLESALE DRUGGISTS,* LIVERPOOL.

Important to Medical Men who dispense their own Medicines—

ENORMOUS SAVING!

Aqueous Tinctures

Equal in every way to the Pharmacopeial Tinctures, but at NEARLY HALF THE COST.

WE use the term "Aqueous" for these Tinctures, but we wish it to be particularly understood that they are not **Non-Alcoholic.** Our method has been to reduce the quantity of spirit to the smallest percentage without affecting the strength of the preparations: this we have succeeded in doing by using another Menstruum in place of a portion of the spirit. We are anxious that these Tinctures shall not be confused with the **Watery Decoctions** offered as Aqueous Tinctures at low prices, which are of little or no Therapeutic Value.

	Per lb.	W. qts.
Tinct. Aconit. Aquos	2/4 ..	—
,, Aurant ,,	1/6 ..	1/5
,, Belladon. ,,	1/6 ..	—
,, Calumbæ ,,	1/6 ..	—
,, Camph. Co. ,,	1/6 ..	1/4
,, Capsici ,,	1/8 ..	—
,, Cardam Co. ,,	1/6 ..	1/5
,, Cascarillæ ,,	1/8 ..	—
,, Catechu* ,,	1/6 ..	1/5
,, Cimicifugæ ,,	1/8 ..	—
,, Cinchonæ ,,	2/- ..	—
,, ,, Co. ,,	2/4 ..	—
,, Cinnam. ,,	2/- ..	—
,, Cubebæ ,,	2/4 ..	—
,, Digitalis ,,	1/6 ..	—
,, Ergot. Ammon. ,,	2/4 ..	—
,, Gelsemii ,,	2/- ..	—
,, Gentian Co. ,,	1/6 ..	1/5
,, Hamamelidis ,,	1/8 ..	—
,, Hydrastis ,,	2/- ..	—

	Per lb.	W. qts.
Tinct. Hyoscyami Aquos	2/4 ..	2/2
,, Iodi ,,	2/2 ..	—
,, Jaborandi ,,	1/8 ..	—
,, Kino ,,	2/- ..	—
,, Lavandulæ Co. ,,	2/- ..	—
,, Nucis Vom. ,,	1/8 ..	1/6
,, Opii ,,	2/4 ..	2/2
,, Podophylli ,,	3/- ..	—
,, Pruni Virg. ,,	1/8 ..	—
,, Pyrethri ,,	1/10 ..	—
,, Quininæ ,,	3/- ..	—
,, Rhei Co. ,,	1/8 ..	—
,, Scillæ ,,	1/6 ..	—
,, Senegæ ,,	1/8 ..	—
,, Sennæ Co. ,,	1/8 ..	—
,, Serpentariæ ,,	1/8 ..	—
,, Stramonii ,,	1/8 ..	—
,, Sumbul ,,	1/10 ..	—
,, Valerian ,,	1/8 ..	—
,, ,, Ammon. ,,	2/- ..	—

* B.P. 1885.

We offer the above Tinctures with every confidence, as each one is tested and standardized when manufactured.

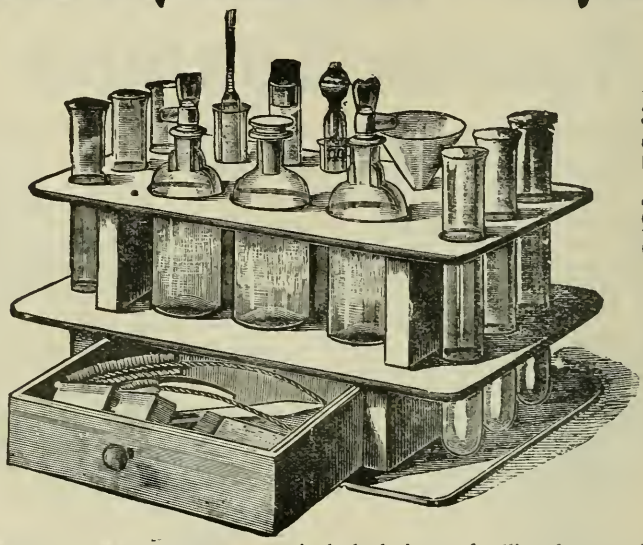
Hundreds of Medical Men have for the last three or four years used these Tinctures exclusively, and have had ample opportunity of ascertaining their value.

The increasing demand conclusively proves their efficacy.

R. SUMNER & CO., Ltd. WHOLESALE DRUGGISTS, LIVERPOOL.

SUMNER'S
NEW URINARY TEST STAND.

PRICE 10/6 EACH NET.



PRICE 10/6 EACH NET.

Messrs. SUMNER & CO. are particularly desirous of calling the attention of medical gentlemen to their new **Urinary Test Stand.** This handy little Stand has been specially designed with a view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinarily low price. We offer it as being equal in every way to the more elaborate Stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10¼-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting-room table. The contents are as follows:—

Urinometer
Albuminometer
Spirit Lamp
Drop Pipette with India Rubber Suction Ball
Graduated C.C. Tube
Test Tubes
2 oz. Stoppered Bottle of Nitric Acid
2 oz. Drop Bottle of Roberts' Test Solution for Sugar
2 oz. Drop Bottle containing Esbach's Test Solution for Albumen
Funnel
Test Tube Brushes
Packet each Red and Blue Litmus Paper
Packets of Filter Paper
Watch Glass
Graduated Pipettes.

From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say, without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

IT IS ADMIRABLY ADAPTED FOR USE IN HOSPITAL WARDS.

R. SUMNER & CO. Ltd., 50a, Lord Street, LIVERPOOL.

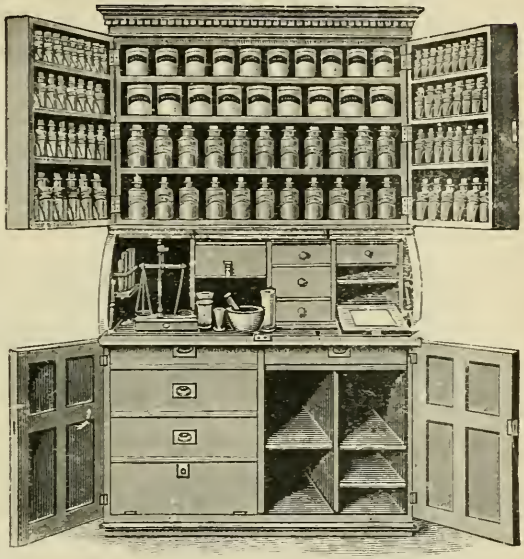
MEDICAL DISPENSING CABINET.

THESE Cabinets have been designed with the greatest care, and the internal arrangements so conveniently constructed that each Cabinet is a **Complete Surgery** in itself.

When closed, they have the appearance of an elegant book-case, and are really a handsome piece of furniture. They are manufactured of the best polished American Walnut, and are divided into three compartments. When opened, the upper compartment lays bare, in a convenient position for dispensing:

38 by 20 oz. } Stopper'd
32 ,, 8 oz. } bottles.
40 ,, 4 oz. }
6 ,, 1 lb. jars.
6 ,, ½ lb. jars.

These are, of course, labelled to suit purchaser.



The centre compartment has a folding shutter, the upper part of which is pushed back into the Cabinet, and the lower falls forward, forming a dispensing counter. This compartment is divided into four divisions, viz.:—

(1,) A recess for an upright dispensing scales, which also contains racks for spirit lamp, test tubes, and urinometer.

(2,) Holds a copper water tank of over a gallon capacity, which is supplied with a brass tap that fits into the medicine bottles. This tank is so arranged that it can be easily filled and cleansed. Under the tank is a division to hold measure glasses, pestle and mortar, &c.

(3,) A series of drawers for corks, ointment and pill boxes, spatulas, &c.

(4,) This division has a falling door, which forms a writing desk, with place for pens and ink, wrapping paper, also drawers for labels, &c.

The base of Cabinet is enclosed in folding doors, which, when opened, discovers:

(1,) A long drawer for splints, &c.
(2,) Two drawers, lined with green baize, for surgical instruments, &c.
(3,) A recess, with a folding door, for keeping Cotton Wool, Tow, &c., in.
(4,) Several recesses for all kinds of dispensing bottles.

The space at the top of the cabinet is so arranged as to form a box, which will be found convenient for storing articles that are not frequently required.

The Measurements are—Height, 7-ft. 4-in.; Width, 4-ft. 2-in.; Depth at base, 19-in. The workmanship is of the highest class, the front being divided into elegant panels, and it has a well-moulded cornice. They will stand any climate, and medical gentlemen either residing or going abroad would find them exceedingly useful and compact.

Price { **In Polished American Walnut, including Labelled Bottles, Jars, and Copper Water Tank** } **£30 net**

Estimates given for Cabinets, complete with Drugs, Instruments, and Sundries, upon application.

N.B.—A Cabinet may be seen any time at our Offices, 50a, LORD ST., LIVERPOOL.

R. SUMNER & CO., Ltd., LIVERPOOL.

DR. LE PAGE'S
AXIS TRACTOR.

*The "**Medical Annual**" says*:—"**We cannot speak too highly of the simplicity and ingenuity of this invention. A ready and practical aid.**"

The Tractor is already used by many hundreds of Practitioners at home and abroad. Simple, effective, and uncomplicated, it allows of traction in *any* direction, fits any ordinary forceps, is attached in a moment when *in situ* without unlocking, and does not interfere with play of the blades, nor with the intermittency of compression.

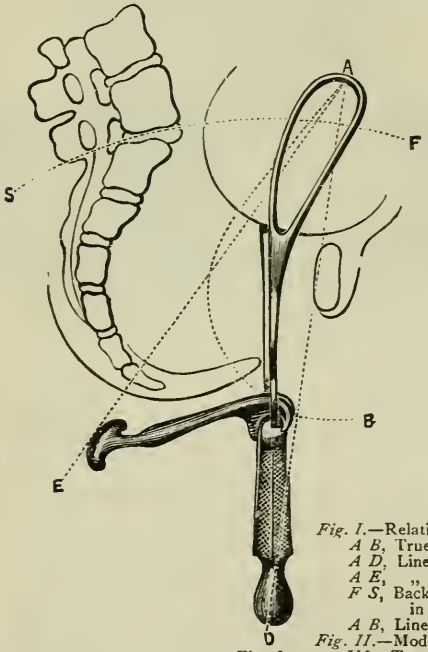


Fig. I.

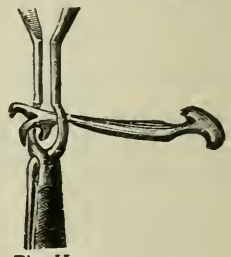


Fig. II.

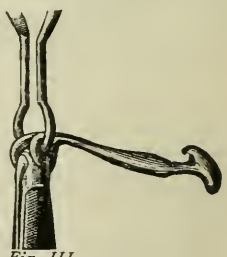


Fig. III.

Fig. I.—Relation of forceps to head and pelvis.
A B, True axis.
A D, Line of traction with forceps.
A E, " " " tractor.
F S, Backward traction, with *D* a fixed point, in altering position of head.
A B, Line of traction with tractor and handle.
Fig. II.—Mode of attachment.
" *III.*—Tractor in position.

Complete control over the forceps is attained, and any desired movement of the head can be effected with ease and precision. The force requisite is much less than is necessary with forceps alone, and the available power is greatly increased.

ONCE USED, ALWAYS USED. Price 8/6, Postage 3d.

R. SUMNER & CO. Ltd., Lord St., LIVERPOOL.

For CONSTIPATION, GOUT, RHEUMATISM, & OBESITY,

PRESCRIBE

Hunyadi János

THE BEST NATURAL APERIENT WATER.

HIGHEST REPUTATION

ALL OVER THE WORLD.

THE LANCET:

"Hunyadi János has now been before the public for years, and has enjoyed a confidence due doubtless to the fact of its constant composition." (1899.)

HOW TO TAKE "HUNYADI JÁNOS":

Dose.—To relieve constipation the average dose for an adult is from a third to half a tumbler, taken on an empty stomach on rising. To obtain the depurative and tonic effects in dyspepsia, biliousness, congestion of the liver, etc., a quarter of a tumbler should be taken *every* morning before breakfast.

Hunyadi János may be taken pure, or mixed with hot or cold water. If hot water be used the temperature should be high enough to make the mixture as hot as can be drunk comfortably. If cold, the water should be at the ordinary temperature, that is to say, not iced or ice-cold.

A draught of pure water, hot or cold, taken immediately after, increases the efficacy of the laxative and obviates any after-taste.

For Children.—The dose is proportioned to the age. Between five and ten years of age, from one to two teaspoonfuls of the water, which may be mixed with milk, will be sufficient; above twelve, the dose is a quarter of a tumbler taken as above.

N.B.—When administered to persons in bed, somewhat larger doses are required to produce the same effect.

CAUTION.—Note the Name of the Proprietor—
ANDREAS SAXLEHNER, on the Label.

Telegraphic Address:
"TENOTOMY, LONDON."

Telephone:
"1489 GERRARD."

ALFRED COX & SONS,

120, NEW BOND STREET,

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(Late of 108, NEW BOND STREET.)

Surgical Instrument,

Cutlers, and Bandage

MAKERS

By Appointment to several London and Provincial Hospitals and Infirmaries; also

TRUSS MAKERS to the RUPTURE SOCIETY.

SPECIALITIES:

ELASTIC STOCKINGS, BELTS, and TRUSSES
ARTIFICIAL LIMBS, CHEST EXPANDERS, SPINAL SUPPORTS, PORO-PLASTIC FELT JACKETS, and ORTHOPÆDIC APPLIANCES
ASEPTIC INSTRUMENTS of all descriptions
STERILIZERS for Instruments, Dressings, and Milk
BATTERIES with Dry or Wet Cells
Personal and Infant WEIGHING MACHINES
WATER BEDS, CUSHIONS, and BOTTLES.

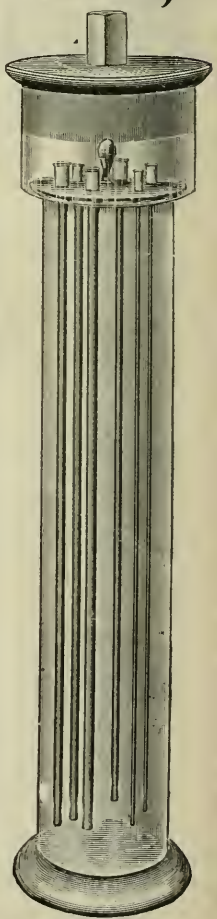
ASEPTIC CATHETER JAR, GLASS

(See Illustration)

With Nickel Plated Metal Holder, for keeping Catheters in solution.

FOR USE IN THE CONSULTING ROOM OR HOSPITAL,

PRICE - **12/6** EACH.



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EXPERIENCED MALE & FEMALE ASSISTANTS always in attendance, and when required, wait on Customers in Town or Country.

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SAFEGUARD

AGAINST

BAD DRINKING WATER,

SO OFTEN THE CAUSE OF DISEASE.

STILL

BURROW'S

"Alpha Brand"

Malvern Water

FROM THE

Historic Spring

STILL AND SPARKLING.

SPARKLING.

The Purest of all Natural Table Waters.

The STILL WATER, 4/- per doz. SPARKLING, 4/6

SIX DOZEN CARRIAGE PAID.

ADDRESS:—

W. & J. BURROW,

Telegrams: Springs, Malvern. *THE SPRINGS, MALVERN.*

Be careful to obtain BURROW'S "ALPHA BRAND."

"M. & M."

POLITZERATION BAGS.

WHOLESALE NET PRICES,

With any one nozzle.

6 oz. ... ... **6s. 6d.**

8 oz. ... ... **7s. 6d.**

If with VALVE, **6d.** extra.

If with EUSTACHIAN CATHETER—

Vulcanite ... **2/-** extra | Silver ... **5/-** extra.

ADVANTAGES ON THE OLD FORM OF BAGS—

1.—The "M. & M." will stand on the consulting-room table.

2.—The rubber of which it is manufactured will not become hard in cold weather, and being of extra good quality, will withstand hot climates.

3.—The shape being better adapted to the hand, all air can easily be expelled.

MAYER & MELTZER,

Surgical Instrument Makers,

71, Great Portland St., LONDON, W.

MALTINE WITH COD LIVER OIL

The difficulty of exhibiting Cod Liver Oil is solved in

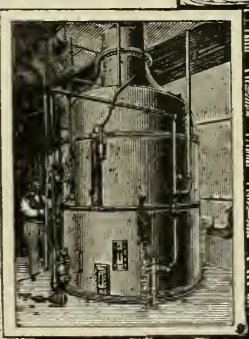
"MALTINE WITH COD LIVER OIL"

by molecular incorporation of a sufficient quantity—30 per cent—of the best Cod Liver in the best malt extract "Maltine." This combination is not only readily tolerated by the fastidious, but gives the best results as regards increasing weight, and improving appetite and general nutrition. The oil is rendered easily digestible, and its therapeutic effect is reinforced by the association with a complementary, highly assimilable nutrient.

MALTINE WITH HYPOPHOSPHITES.

By its conversion of farinaceous foods into Maltose and Dextrine, and its stimulation of general digestion, "Maltine" promotes the assimilation of the Hypophosphites, and is itself a valuable Bone-forming agent, as it contains the natural phosphates of the best malt.

Each fluid ounce contains:	Hypophosphite Lime -	3 grains.
	,, Iron -	2 ,,
	,, Soda -	3 ,,



Samples sent free of Charge to Physicians.

The Maltine Manufacturing Co. Ld.

24 & 25, HART ST. BLOOMSBURY, LONDON, W.C.

BRAND'S NUTRIENT POWDER

(DENCE'S PATENT)

FROM RAW MEAT.

THIS article consists of powdered muscle fibre only, from which the moisture has been removed at a temperature below the coagulation point of the muscle proteids. It is sterilized and tasteless, and contains all the constituents of lean meat in an unaltered condition.

One ounce of the Powder is equivalent in nutritive value to four ounces of Fresh Lean Meat.

Its great dietetic importance to Invalids consists in the ease and completeness with which it can be digested, and in the fact that it can be assimilated with a minimum of effort upon the part of the digestive organs.

In the process of manufacture **nothing is removed except the water of the fresh meat, its taste and odour, and the tough, stringy and indigestible portion rejected in sifting.**

One to two ounces taken daily (equivalent to four or eight ounces of fresh lean meat) will suffice for the complete maintenance of the body-weight and healthy functions of an invalid person in a state of convalescence.

Each genuine article bears the signature—

Brand & Company

Prepared by BRAND & CO. Ltd.,

Of Mayfair, W. & Mayfair Works, Vauxhall, London, S.W.

REASONS WHY

Angier's Emulsion

(Petroleum with Hypophosphites),

Is Superior to Cod-Liver Oil.

1.—Never grows rancid, has no taste or flavour which is objectionable, and no smell that suggests nausea.

2.—Never causes eructations, nor repetition, but agrees with delicate stomachs, and can be taken if nausea be threatened.

3.—Never causes diarrhœa (as is sometimes the case with Cod-Liver Oil), but relieves it by arresting the growth of intestinal bacteria, and thus cleansing the bowel.

4.—Can be administered if disorders of the stomach and bowel exist, and is indicated in these conditions.

5.—Increases weight by promoting digestion, improving nutrition, increasing absorption and metabolism. Moreover, this increase in weight is effected on ordinary diet, over-feeding with its attending discomforts not being necessary.

6.—Acts by augmenting the tissues and conserving the nourishment from ordinary ailments (not by mere addition of hydro-carbon material), thus adding to weight or preventing its loss.

7.—Children who will not take Cod-Liver Oil nearly always like **ANGIER'S EMULSION**, and take it with pleasure.

FREE SAMPLES TO THE MEDICAL PROFESSION.

☞ CAUTION.—When prescribing be careful to specify ANGIER'S EMULSION; otherwise some disappointing imitation made with ordinary petroleum may be substituted.

The ANGIER CHEMICAL Co., Ltd.,

31 & 32, SNOW HILL, LONDON, E.C.

BATTLEY'S SOLUTION OF OPIUM.

LIQUOR OPII SEDATIVUS (BATTLEY).

Strength—Twice that of Tinctura Opii B.P.

Battley's Solution of Opium may be given with the greatest of safety in those cases where an opiate is required or indicated, and from its great purity, absence of all hurtful matter, such as narceine and resinous bodies, is admissible when all other preparations would prove hurtful.

Liquor Opii Sedativus (Battley) having now existed for nearly 100 years, and after being opposed by vain and worthless opponents has upheld its old position as "Second to None" in the Hypnotic World

Battley's Solution of Opium has none of the disagreeable after-effects that most soporifics and hypnotics have, no nauseating or depressing influences with racking headaches, etc., but exercises a quieting and benign sway over the patient, giving him or her a refreshing sleep with freedom from pain. The last few years it has come to the front in cases of Cancer and Sarcoma, having been used widely both in private and hospital practice with great ease and comfort in these instances.

Battley's Solution of Opium never varies in strength.

Battley's Solution of Opium does not leave behind it any unpleasant effects.

Battley's Solution of Opium is now in use throughout the United Kingdom; throughout the Continent (France excepted); the Colonies, and largely in America, both South and North; and we ask all those who have not tried Battley's Solution of Opium to send for Samples (Free).

The "Medical Annual," speaking of Opium says: **"Battley's Solution of Opium** is a common word in the Practitioner's vocabulary. It has gained its reputation by its intrinsic value as a remedy which contains all that is sedative and anodyne in opium without its resinous constituents which are, therapeutically speaking, impurities."

The "Lancet," speaking of Opium, says: "New Hypnotics come and go, each with hopeful forecast of being superior to those already known, each in turn aspiring to give **peaceful refreshing sleep,** which shall be followed by no **unpleasant after-effects;** and yet, in the minds of many thoughtful practitioners, opium and its preparations still maintain their ground." We would point out to the Medical Profession that Battley's Solution of Opium has for the past eighty years answered these **three** most important requirements, and stands out above all other hypnotics in excellence.

LIQUOR OPII SEDATIVUS.

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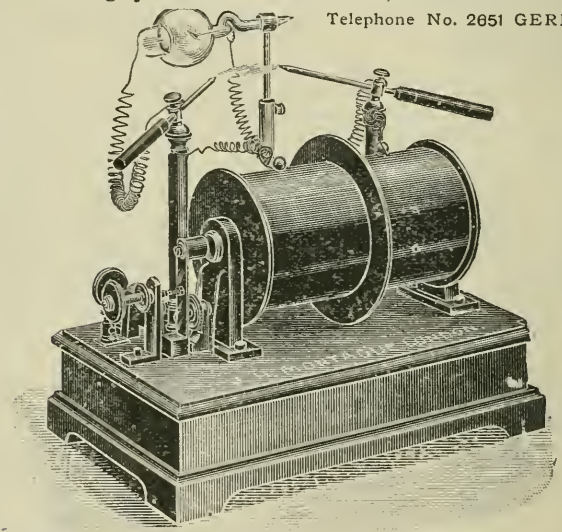

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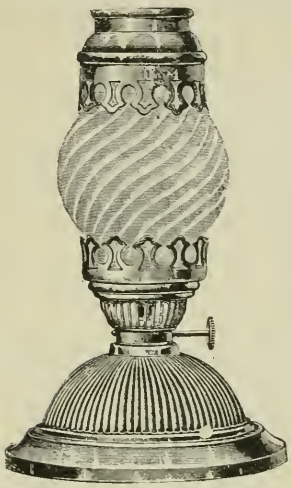

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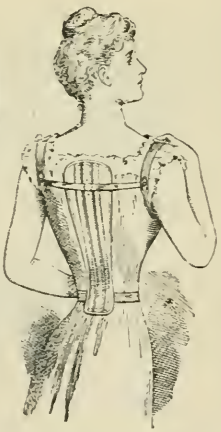

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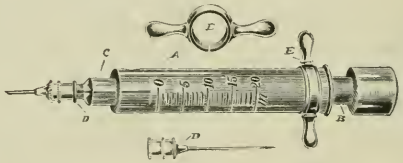

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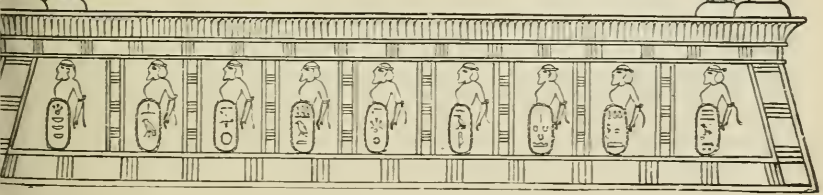

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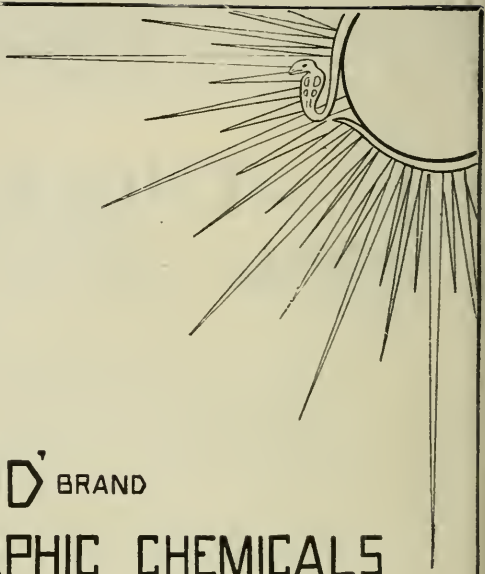

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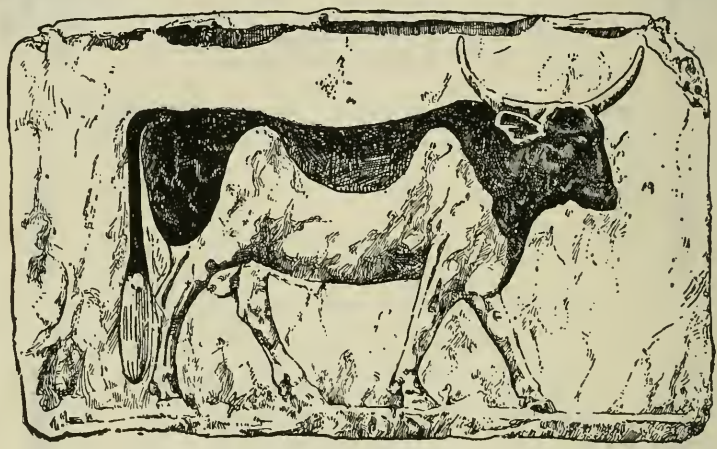

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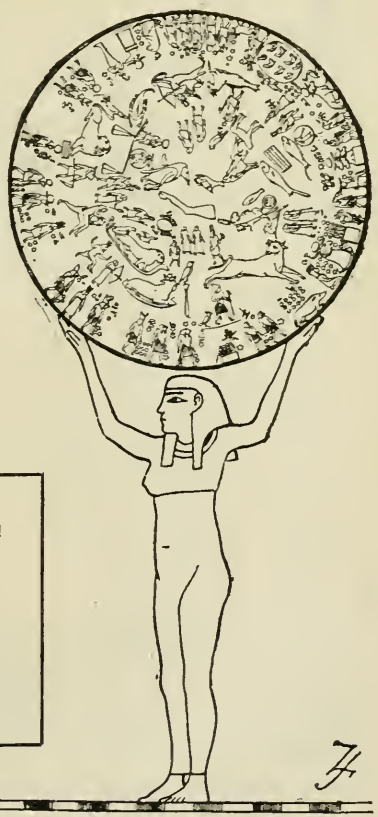

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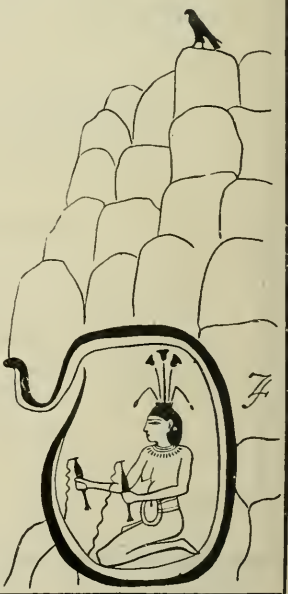

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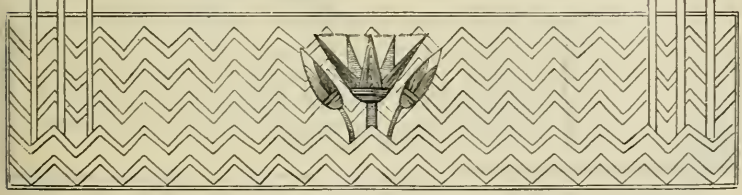

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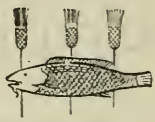

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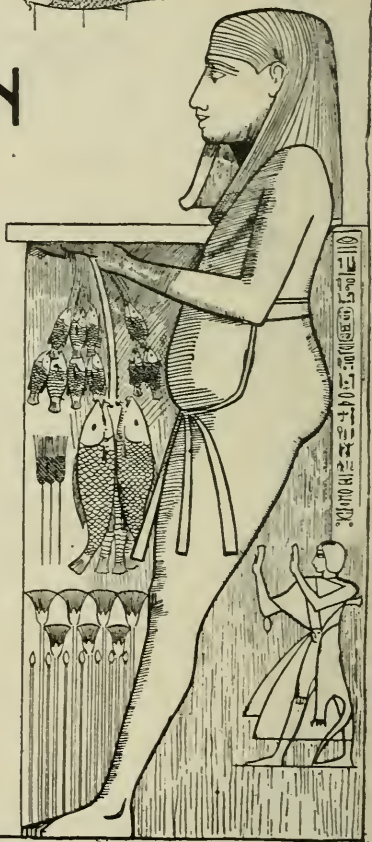

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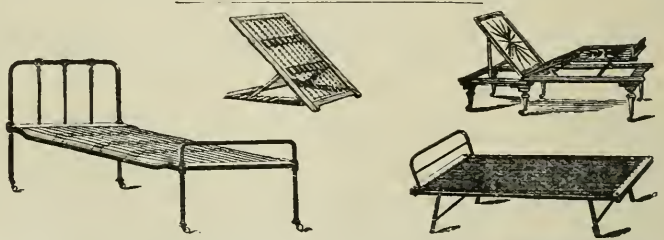

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PREFACE.

TWENTY years have passed since we first asked the profession to accept the "Medical Annual" as a help to them in their daily work. Its evolution since then, from a handbook of some 300 pages to one containing nearly three times that number, does not represent so much the mere improvement of a book, as the increased demands of our readers for information.

The question has been put to us, Why give details of an operation which only the specialist is called upon to perform? Our answer is, that the general practitioner of the present day wants to know these details. We find that readers practising in remote country districts, and distant parts of the world, are our most severe critics if we do not supply information on the latest questions of medical science. This was not the case when we published our first issue, and this development of the "Annual" has only kept pace with the more widespread growth of general professional knowledge. The day has passed when we could reject subjects as being without interest to the "general practitioner," in contra-distinction to a minority who were supposed to take a deeper interest in medical science.

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THE MEDICAL ANNUAL.

Part I.—The Dictionary of Materia Medica and Therapeutics.

A REVIEW OF THERAPEUTIC PROGRESS FOR 1901.

By WILLIAM MURRELL, M.D., F.R.C.P.,

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Together with an Article on "Toxins and Anti-Toxins," By William Murrell, M.D., and Prof. Joseph McFarland, M.D., Philadelphia.

INTRODUCTORY.

There has been no striking development in the domain of therapeutics during the past twelve months. New remedies have been introduced, and are constantly being introduced, but do little to advance our knowledge of the treatment of disease.

The recent boom in organic-therapeutical preparations, or opotherapy, is on the wane, and the only members of the class which seem to have obtained an enduring position, are thyroid and suprarenal extract, and their derivatives. Ovarian extract, mammary gland, and hepatic substance have their advocates, but no one seems to be very enthusiastic about them. Those who are curious in such matters may devote their attention to the investigation of the pharmacological action and therapeutic uses of corpora lutea sicca and glandula parotis.

There is always a popular demand for remedies for **Impotence**; and Yohimbin is said to do good, but whether in virtue of any physiological action which it may exert, remains to be proved.

Some excellent work has been done of late in connection with arsenic and glucose, probably as the result of the recent epidemic of arsenical poisoning.

Dionin and heroin hold their own, and there seems to be a demand for remedies of the morphine class.

Eucaine β is undoubtedly a useful local **Anæsthetic**, and when injected deeply and in considerable doses, it serves for the performance of plastic and other operations of some magnitude. It has many advantages over cocaine, which in some respects it threatens to supersede.

Urotropin is still extensively employed, and Iodipin, as a means of introducing iodine into the system, is attracting attention. Trional is temporarily under a cloud, and many cases of poisoning by the prolonged use of this drug are recorded.

The recent tuberculosis congress has not added much to our knowledge of the treatment of phthisis, and there are indications that the open air method has seen its best days. Formic aldehyde is largely employed as an inhalation in **Tuberculous Phthisis**, and there is a general consensus of opinion that there is nothing to be gained by employing the drug hypodermically. Cacodylate of sodium has become quite a popular remedy, but its administration, especially by mouth, is not unattended with risk, and symptoms of arsenical poisoning often develop somewhat unexpectedly. Tuberculin R has its advocates, and it is possible that in quite the early stages of phthisis, it may, when combined with other treatment, do good.

Amongst food products, Plasmon is the favourite, and its various preparations are now extensively employed.

Why Drugs are Given.

Dr. Goodhart, in the address in medicine delivered before the meeting of the British Medical Association, points out that we give drugs not only to cure disease, but for many other reasons. For example, drugs are often given, not because the disease demands one, but because the patient is not happy till he gets it: too often he is not happy even then. They are given sometimes to hide our ignorance or to mark time, while we watch and wait; and we often give drugs as an experiment, in the hope that they may do good. It is often said as a matter of prejudice against the hospitals of our country—than which none could possibly be conducted more humanely and considerately—that the patients are made the subjects of experiment. So they are. But this happens not only in the hospital. If it be true—and it is true—that we are all unique in our way, and that it is this individualism of man that constitutes the great barrier to the evolution of any system of medication, it follows that each new patient who demands treatment is more or less a case for experiment; and it is by experiment of this qualified kind—upon the king as he sits upon the throne, as for the

poorest being within his realm—not only that the value of drugs is established, and new powers gained over disease, but by which an increase of knowledge of disease itself is gained. The cure of disease is always the fundamental object; but not far behind it should come the alert eye to watch the deviations from the hypothetic normal which the individual resistance, or the drug in its action, may show in the course of the case. All treatment by drugs is more or less of an experiment, and it is in this fact that the enormous number of new drugs daily poured upon us finds its justification. Many an ailment that afflicts mankind badly needs a remedy, for which, as yet, no remedy is opportune; and who knows but what in each new drug some human ill may find alleviation?

Diseases run in fashions, and there are fashionable drugs which, while the sun shines upon them, become the darlings of Society. Who does not even now remember the boom of the antipyretics? A few of them have remained to us for other purposes; but as antipyretics, who gives them now? They are not by any means valueless when given appropriately, but they were rushed far more than they were worth, and they are now buried by later booms, such as animal extracts, and antitoxins, and many of these will be buried too.

The open-air treatment of **Consumption**, of which we are hearing much at the present day, is also bidding fair to come under the baneful influence of routine. What does the consumptive and his friend see in this? He sees a residence for a few months in a home, and a cure at the end of it. Is that what he has any chance of obtaining? Certainly not: and in proportion to the exaggerated hope will come the bitterness of the disappointment to the sick, and the discredit to us. The benefit to be obtained in these sanatoria is that there will be learned a habit of life—what we mean by plenty of good food and plenty of fresh air; and having learned his lesson, the tuberculous man will need to practise it all the rest of his life. There is no "cure" in this treatment, as the sick man understands cure; for although it is true that there is no disease more often arrested than phthisis, it is equally true that there is no disease that has a more inveterate tendency to relapse, and when you come to strike the balance between arrest and relapse, the latter has the best of it. Therefore if the open-air treatment is to take its real place and be of any abiding value, the principles of the sanatorium must be introduced into the home.

With regard to the use of the bromides in **Epilepsy**, that these are useful drugs in this complaint no one will question. But long ago it has gone forth from those in authority in such matters, that

after a person has suffered from epileptic fits, the drug must be given regularly in considerable doses, and for long periods of time—a year or two, or more—to prevent their recurrence. This advice is very generally acted upon; there is no doubt that it has become the routine treatment of epilepsy; and as such it often does a great deal of harm, without a corresponding equivalent of good.

ACUPUNCTURE.

Sir James Grant[1] has recently redirected attention to the value of acupuncture in the treatment of **Lumbago** and other myalgias. He inserts some twelve or fourteen small (No. 8) fine steel needles, their number varying with the extent of the part to be treated, from one-half to three-quarters of an inch into the muscular tissue through the skin, at a distance apart of from one-half to three-quarters of an inch, and allows them to remain *in situ* for one or two minutes. He finds that although before puncture the painful muscles may be hard and tense, they soon relax when the needles are in position, and become soft, pliable, and painless. The patients, although previously almost immobile on account of pain, can walk about freely after the needles have been withdrawn. He attributes the relief from the distressing symptoms to changes in the electrical potential of the muscle, induced by the introduction of the needles. After their removal the skin is sponged, and friction is applied with a rough towel. The method is very old, but its reintroduction is of interest.

REFERENCES.—[1] *Mont. Med. Jour.*, July, 1900; *Brit. Med. Jour.*, Oct. 20, 1900.

ANILINE.

Kelynack,[1] of Manchester, presents a valuable abstract of the literature relating to the medicinal uses of this drug.

Aniline ($C_6H_5NH_2$, mono-phenylamine) has long been known to possess powerful **Poisonous** properties, and yet it has frequently been recommended as a medicinal agent for a number of different affections. St. Clair Thomson[2] has called attention to its evil effects, and there is reason to believe that it is frequently employed without a proper apprehension of the risks which its use entails. It has been recommended in the treatment of phthisis, and Kremianski advised its use as an inhalation. It has been employed in the following form: aniline 1 part, oil of eucalyptus 7 parts, used with a Siegel's spray; oil of anise, peppermint, or gaultheria have also been used as the diluent. The method was considered dangerous by a committee of medical men appointed to investigate it at Moscow.[3]

Seslavin[4] and others have reported unfavourably on this system of inhalation, and the toxic action of the agent being generally recognised, this method of treatment has been discarded, although Seymour Taylor[5] after prescribing the sulphate of aniline to phthisical patients, states that "the amelioration of symptoms has been surprising." Aniline dyes have also been employed in the treatment of inoperable malignant disease.[6]

Sir Charles Cameron[7] has described cases where children have developed symptoms of aniline poisoning after partaking of coloured confections, but some of the toxic conditions described as occurring from the use of aniline dyes may have been due to arsenic, as Dr. Quinlan[8] records a remarkable example of arsenical poisoning among boys in Dublin who had feasted on confectionery coloured by the use of Scheele's green. Dr. Fred Smith[9] has recorded a case where symptoms of aniline-poisoning developed after about 3 ounces of marking-ink had been swallowed by a woman, aged forty-two. The lips were of a dark purple, the general surface of the skin was deadly white, with a slight bluish tinge; the conjunctival reflex was present, the pupils were small, with very sluggish and slight reaction to light; the breathing was slightly stertorous, and the pulse full and slow—sixty per minute; there was feeble twitching of the muscles of the fingers of both hands. The patient never recovered consciousness, and died twelve hours after the poison was taken.

Very serious effects may arise from absorption by the skin or mucous membranes. Gray[10] has recommended aniline as a medium for the application of local anæsthesia in otological cases, for throat work, and the production of anæsthesia in mucous surfaces generally. The danger arising from such has been portrayed by Dr. St. Clair Thomson.[11] His patient was a medical man. A 10 per cent. solution of cocaine was used in a menstruum of equal parts of aniline oil and rectified spirit, and applied on a small pledget of cotton-wool. Two hours and a half after the application, and while still in bed, the patient noticed a peculiar blueness of his finger-nails, and his wife remarked that his face was also blue, the tint deepening. There was no fever or mental disturbance. The pulse was small and somewhat increased in frequency, and the left ventricle was enlarged to two finger-breadths outside the left nipple line. There was nothing discoverable in the heart or lungs to account for the cyanosis, which was ascribed to the toxic effect of the aniline oil on the red corpuscles. The blue colour gradually disappeared in the course of the day. The area of

cardiac dulness again became normal, and no murmur was discoverable.

Ten children after wearing yellow shoes which had been dyed with a pigment containing 90 per cent. of aniline, were seized with prostration, pallor and cyanosis. Neumin[12] used aniline as an external application for parasitic skin affections. When more than about 20 minims were used toxic symptoms developed, and when small quantities were repeatedly employed chronic poisoning occurred. James Startin[13] has drawn attention to the occurrence of cutaneous lesions from wearing fabrics dyed with aniline coal-tar dyes.

Bodies allied to aniline produce similar, if not identical, symptoms indeed, nitro-benzol is said to be changed into aniline in the blood.[14]

Kelynack's attention was drawn to the dangerous character of this group of chemical agents some years since, when investigating a fatal case of benzol poisoning.[15] This led him to make inquiries respecting occurrences of toxic symptoms amongst those engaged in the manufacture of aniline. A boy, aged fourteen, working at an aniline works, accidentally spilt some aniline on his hands and clothes. When seen he was very pale, the lips were blue, he felt cold, complained of headache, and there was diarrhœa. Later he became faint, the pulse was weak, and there was distinct cardiac depression. The soiled clothes were removed, and the hands cleansed from the aniline stain. He was wrapped up in blankets, and a hot poultice applied over the cardiac region. Ether and ammonia were administered ; brandy and opium were also given at first, but appeared to be prejudicial. The patient made a good recovery, although he remained anæmic for some time.

An analytical chemist had for some time been anæmic, which he attributed to aniline. He came home from his work feeling faint and sick, and with a bad headache. Shortly afterwards he had a fainting attack. When medically examined he was in bed, looking pale, and feeling tired and cold. His heart was feeble, and the pulse weak and soft. There was epigastric pain, vomiting, slight cough, and dyspnœa. He stated that one of his boots was torn underneath the sole, and that he had accidentally stepped into some aniline ; and to the absorption of this by the skin he attributed the symptoms Under ether, ammonia, and digitalis, hot applications to the back, epigastrium, and cardiac region, and absolute rest, he quickly improved, but the anæmia remained for some time.

A chemist who had been working with condensations of aniline in large open vessels underneath the bench where he worked, developed cyanosis, nervousness, impotency, and cardiac enfeeblement.

The author learns from those having a practical acquaintance with the dangers of aniline manufacture, that the toxic symptoms are identical with those due to nitro-benzine, di-nitro-benzine, and their homologues. Some men are far more susceptible than others.

Grandhomme's[16] work should be consulted by all interested in the study of the physiological action of aniline. The evidence shows that aniline is an extremely dangerous agent, and its use in medicine, if ever desirable, can only be justified when this fact is borne in mind.

REFERENCES.—[1]*Treatment*, July, 1901 ; [2]*Lancet*, 1901, i, p. 1143 ; [3]*Brit. Med. Jour.*, 1887, i, pp. 579, 789, 842 ; [4]*Lancet*, 1888, ii, p. 388 ; [5]*Ibid.*, 1894, ii, p. 598 ; [6]*Ibid.*, 1892, i, p. 414 ; [7]*Dub. Jour. Med. Sci.*, 1891, i, p. 266 ; [8]*Lancet*, 1891, i, p. 667 ; [9]*Ibid.*, 1894, i, p. 89 ; [10]*Ibid.*, 1900, ii, p. 1125 ; [11]*Ibid.*, 1901, i, p. 1143 ; [12]*Ibid.*, 1888, ii, p. 392 ; [13]*Ibid.*, 1898, ii, p. 835 ; [14]*Pract.*, 1889, vol. xliii., p. 14 ; [15]*Med. Chron.*, Nov., 1893 ; [16]*Sanit. und Soc. Bez.*, von Sanitats-Rat.

APOMORPHINE.

Douglas[1] states that the hydrochlorate is a useful **Hypnotic,** provided the doses employed are sufficiently small not to excite vomiting. The usual hypnotic dose is 2 mgrm. (gr. $\frac{1}{32}$), the hypodermic being the best mode of administration. The nauseating dose varies in different individuals, and it is necessary to select doses sufficiently large to obtain the hypnotic effect without exciting nausea. A dose corresponding to a third of the emetic dose suffices for this purpose. Sleep is produced in from five to twenty-five minutes after the administration of the apomorphine. It is absolutely normal, and its termination is not attended by any disagreeable symptom. Its duration is from one to two hours, and a small dose of some other mild soporific is required to extend the duration of the apomorphine sleep. There is not the slightest risk of habituation, since any increase of the dose is attended by vomiting. Practical importance attaches to the fact that apomorphine affords a ready means of getting delirious patients into bed, as it does not fail even in the wildest delirium.

REFERENCES.—[1]*Merck's Arch.*, June, 1900 ; *Merck's Annual Report*, March, 1901 ; *Brit. Med. Jour.*, Oct. 20, 1900.

ARSENIC.

The following is an abstract of a statement on the action of this drug submitted by Sir Lauder Brunton[1] to the Royal Commission on Arsenical Poisoning.

Arsenic belongs to the same chemical group as nitrogen, which is an essential ingredient of all living tissues. Other members of

the group are phosphorus and antimony, both of which have an action like arsenic in many respects. It is not certain whether arsenic acts by replacing nitrogen or phosphorus in the living tissues, and especially in protagon, which is one of the most important constituents of nerves; but it appears to have the power of altering the chemical changes or metabolism which occur in them during life and on which their functions depend. In minute doses it appears to be beneficial, but in large doses it is poisonous and will destroy both animal and plant life, producing in man or animals irritation and inflammation of any part of the body on which it may be applied.

This application may be made directly to a part, or the arsenic may reach it through the circulation. Thus arsenic, when it is swallowed, reaches the stomach and intestines by direct application; in the form of dust, as from wall-paper or in making artificial flowers, it may enter the eyes, nose, and air-passages; or it may be applied directly to the skin. If much diluted it may produce little or no local irritation of the stomach, intestines, or respiratory passages, but from these may be absorbed by the blood and carried by the blood to every part of the body. When absorbed from the stomach and intestines, it is obliged to pass through the liver before it can enter the general circulation, and consequently the largest amount of arsenic is usually found in this organ after death from arsenical poisoning. Whilst circulating in the blood it may act on the heart, muscles, and nerves. But it is not carried by the blood only to these organs, for through the circulation it goes a second time to the stomach, intestines, respiratory passages, and mucous membranes of the eyes and skin. By these organs it is eliminated, and during the process of elimination it may again give rise to irritation in them just as it would do if directly applied.

When arsenic is applied to a wound it produces more violent and more immediate inflammation of the stomach than when the poison is administered internally, and this inflammation of the stomach precedes any appearance of inflammation in the wound. It may be inferred that arsenic, in whatever way it is administered, does not produce its effect even on the stomach until it is carried into the blood. This conclusion is perhaps not strictly true for arsenic in large doses and in a concentrated form, but it is probably correct when the poison is taken in moderate or small doses and in a diluted form.

Whilst circulating in the blood, arsenic is carried to every organ and tissue of the body, and affects markedly the nervous system

and muscles, the mucous membranes, and skin. It begins to be eliminated by the kidneys within a few minutes of its absorption, and is also eliminated by the mucous membranes and skin. If only small doses are taken daily the whole of the poison may probably be daily eliminated, and it may be taken for months without any harm. But if the doses are larger, less is eliminated daily than is absorbed, and it becomes stored in the body and produces symptoms of poisoning. During the process of elimination it irritates all the mucous membranes of the skin, and produces corresponding symptoms.

The effect of arsenic is modified by the age, strength, and constitution of the patient taking it, women usually being able to take less than men, and children very much less than either. Susceptibility varies very considerably, and while 3 minims of Fowler's solution will sometimes cause such symptoms of intestinal irritation as will necessitate its discontinuance, other patients will take 30 minims, or even more, three times a day without any discomfort whatever. The way in which it is given alters its action, so that if 5 minims of Fowler's solution were given on an empty stomach, three times a day, it would probably produce irritation of the stomach and intestines, whereas if given when the stomach was full it would be diluted by the food and be absorbed without producing any local irritation whatever. When much diluted the local action of arsenic on the stomach and intestines at the time of taking it is probably very slight, and the gastro-intestinal irritation is comparatively trivial as compared with the other symptoms, and is probably due to irritation of the mucous membrane occurring during elimination.

During the circulation of arsenic in the blood it is not improbable that its action may be determined to one part of the body or to another by other substances taken at the same time. A well-marked instance of this kind of action is known in the case of mercury; alcohol seems to direct mercury to the nervous system, and cause it to act upon them. Mercury taken along with alcohol seems to have more tendency to produce peripheral neuritis than if taken alone; and something analogous may have taken place during the recent outbreak of alcoholic arsenical poisoning.

Herbert E. Durham[2] in a recent paper on **Ague** points out that in the treatment of an individual suffering from ague in a region where he is likely to be a danger to his fellow-men, every endeavour should be made to prevent the development of sexual parasites in his system. For the patient's own safety he must be given quinine in some form; at the same time, for the safety of the community, the administration of some drug such as

arsenic should be commenced. It is not impossible that this may also redound to the benefit of the patient himself. An effective and rapidly acting drug which would prevent the formation of sexual forms is calculated to be of material help in banishing ague from a district. So far as drug treatment may be feasible in conjunction with other means, it is to the aid of such a drug, and not quinine, that we must look with hope.

Charles H. Melland[3] in reviewing the treatment of **Pernicious Anæmia**, points out that the discovery by Bramwell in 1877, of the beneficial effects of arsenic in the treatment of pernicious anæmia, marks one of the greatest advances in modern medicine. It is usually given in the form of Fowler's solution in doses of 5 minims, three times a day, increasing the doses at the rate of 1 minim every other day until they reach 12 or 15 minims. These large doses—and a dose of ½ to 1 drachm in the day may be requisite before good results are obtained—require to be carefully watched. It is, however, often essential to push the drug to the utmost limit of safety, and cases have been described where good only followed on large doses being substituted for small. Under the use of this drug the corpuscles, which may have sunk to 1,000,000 per c.mm. or less, are found to steadily increase, whilst the abnormal forms of corpuscle disappear, and are replaced by healthy red cells. Experimentally arsenic has been found, when given in moderate doses, to produce a stimulating effect on the red bone-marrow, causing it to increase and replace the yellow marrow, and also to produce many more red cells. Whether this stimulation of the activity of the bone-marrow represents the whole action of the arsenic is doubtful. Some observers are of opinion—and experiment appears to bear out their contention—that arsenic in some way diminishes the hæmolytic action of the liver ; whilst Hunter, who views the disease as a chronic infection of the gastro-intestinal tract, regards the effect of arsenical preparations solely as due to their antiseptic action. Whatever the explanation may be, instead of the steady progression to a fatal ending in from twelve to fifteen months that Addison described, the majority of cases reported in which arsenic has been used at an early stage, have presented, for the time, an almost complete cure. Unfortunately, these beneficial results have seldom proved permanent ; one recurrence is found to follow on another, each increasingly difficult to cure, till finally, after two, three, or four years, comes an attack which defies all treatment.

References.—[1]*Lancet*, iv, 1901 ; [2]*Brit. Med. Jour.*, March 2, 1901 ; [3]*Med. Chron.*, June, 1901.

ATROPINE.

Prof. R. D. Rudolph[1] cites some interesting experiments in connection with this alkaloid, which has been termed by Binz "the most powerful of all internal stimulants."

If a dose of $\frac{1}{50}$ grain of atropine sulphate be administered hypodermically to a dog, a marked effect is produced in thirty seconds; the pulse increases in rapidity, the blood-pressure rises rapidly, and the respiration is hastened and rendered more vigorous. The animal, unless deeply anæsthetized, tends to struggle. If in an animal thus placed under the influence of atropine the vagi be cut, no effect is produced on the pulse or blood-pressure. If the distal end of one of the cut vagi be stimulated, no alteration in the blood-pressure tracing occurs, the effects of atropine on the heart closely resembling those produced by section of both vagi.

E. Müller has shown that clinically the effect of atropine in hastening the heart's action decreases with advancing age, and is more or less wanting where the heart has, from valvular disease or other causes, had extra strain thrown upon it for some time. As a means of averting **Danger from Chloroform,** atropine has long been recommended, and some anæsthetists give an injection of it alone or with morphine, before commencing. Kunkel condemns this as causing delay in the awakening of the patient, though this is a trifling matter in comparison with increased safety. The author found that ten dogs who were under the influence of atropine—in three cases combined with morphine—were very decidedly more difficult to kill with chloroform than animals not so treated. Atropine may be used as an emergency remedy when danger has occurred during chloroform administration, and as an example of its value the author quotes the case of a fox-terrier given chloroform on a towel. He struggled, and then suddenly the respiration became shallow and ceased. Artificial respiration was used without success; the tongue was forcibly drawn out and seen to be deeply cyanosed, and the heart could not be heard on auscultation. One-fiftieth of a grain of atropine was given hypodermically, and the artificial respiration was kept up. A minute later the heart was felt to be beating rapidly. Artificial respiration was discontinued, and soon natural breathing commenced in a rapid shallow manner, and the animal recovered. The same thing occurred in another dog. Both animals seemed dead when the drug was given, and probably would have died had it been withheld.

Ernest Bashford[2] has investigated the action of atropine on white rats poisoned with **Morphine,** the salts employed being morphine

tartrate and atropine sulphate. In these experiments the morphine and atropine were injected simultaneously. If the injection of atropine were postponed for thirty minutes after that of morphine, the dose of morphine which could be antagonised by atropine was at the most one and a half times the minimum fatal dose, instead of two and a quarter times when the injections were given together. The maximum effective dose of atropine was at the same time lowered.

The incomplete antagonism, and the possibility of the atropine reinforcing the morphine and increasing its effect, are the causes of the controversy on this subject. Most observers have employed too large doses of atropine, and the smallness of the dose of atropine which can be safely given in morphine poisoning is the most remarkable point brought out by the experiments. Not more than 1·5 mg. (about $\frac{1}{42}$ gr.) of atropine should be injected, and the dose should not be repeated. Binz has recommended repeated doses of 10 to 30 mg. (nearly $\frac{1}{2}$ gr.). It is important to keep the patient warm.

Horatio C. Wood, jr.,[3] says that belladonna is frequently replaced, especially in the manufacture of plasters, by the so-called "Japanese belladonna," *Scopolia carniolica*. This substitution has become so important that the American Pharmaceutical Association has undertaken an investigation of the subject.

In the *Atropa belladonna* there are present two (possibly more) important alkaloids—atropine and hyoscyamine. *Scopolia carniolica* contains probably hyoscyamine and hyoscine. The proportion of hyoscine in the scopolia rhizome is very small; otherwise one would be led to conclude *a priori*, on account of the differences between hyoscine and atropine, that the two plants could not have similar therapeutic virtues.

Concerning the physiological action of hyoscyamine, the dominant alkaloid of scopolia, the studies of Laurent,[4] Oliver,[5] Guauck,[6] and other investigators, have given us a fairly complete knowledge. Husemann[7] says: "Hyoscyamine acts locally like atropine, constricting the blood-vessels; it increases the pulse-rate by paralysis of the vagus peripherally, and in small doses elevates the blood-pressure." Hyoscyamine also acts like atropine in dilating the pupil, lessening secretion, and increasing respiration. It is common belief that hyoscyamine is more hypnotic than atropine, and does not produce the violent delirium characteristic of atropine poisoning. As Cushny[8] points out, the difference is so slight that only careful studies with absolutely pure drugs, would justify positive conclusions; and in some cases of poisoning by hyoscyamus the delirium has been of a very active nature.

For the purpose of comparison Wood studied the effects of the separated alkaloids, tinctures, and fluid extracts of both drugs, all of which were prepared specially.

In frogs both drugs produced, when given hypodermically, a rapidly increasing paralysis. As was shown by Fraser,[9] when large sublethal doses are given, the paralysis occasioned by atropine is followed by a condition of exaggerated reflexes, frequently associated with motor weakness. This sequence of symptoms is commonly attributed to a depression of the inhibitory centre of the cord, which still endures after the paralysis of the motor cells has passed off. It was found that this paralysis of Setschenow's centre is equally well marked after the use of the scopolia alkaloids, as after atropine.

There remains still one important point to be considered, namely, the comparative strength of the two drugs. Obviously that of the crude drugs depends on the percentage of active principles present, and is a pharmaceutical question, but the relative power of the alkaloids is of importance. The evidence from outside, on this point, is so contradictory as to be of very little value. Husemann[10] gives the dose of hyoscyamine as one to two milligrammes, and in a collective clinical investigation the general consensus of opinion was that hyoscyamine should be given in doses of $\frac{1}{100}$ to $\frac{1}{25}$ of a grain. On the other hand, Shaw[11] uses it in $\frac{1}{4}$ grain doses. That the majority have not erred from excessive timidity is shown by the fact that $\frac{1}{40}$ grain has caused serious poisoning. Either the observers were using different substances, or some samples contained large amounts of impurities. As evidence of this latter the author refers to Merck's catalogue, where "Hyoscyamine, pure," is recommended in doses of $\frac{1}{5}$ to $\frac{1}{4}$ grain, and "Hyoscyamine, c. p.," in doses of $\frac{1}{130}$ to $\frac{1}{65}$. [Probably one may be amorphous, and the other the crystal.]

REFERENCES.—[1]*Mont. Med. Jour.*, Oct., 1900; *Treatment*, 1901; [2]*Arch. Intern. de Pharm.*, vol. viii., 1901; *Brit. Med. Jour.*, May 11, 1901; [3]*Therap. Gaz.*, April 15, 1901; [4]*Thesis*, Paris, 1870; [5]*Amer. Jour. of Med. Sci.*, 1881; [6]*Verhandl. d. Physiol. Gesell.*, Berlin, 1881; [7]*Pflanzenstoffe*, p. 1220; [8]*Phar. and Ther.*, 1899; [9]*Trans. Roy. Soc. Ed.*, 1872; [10]*Pflanzenstoffe*; [11]*New York Med. Rec.*, 1880; [12]*Wood's Therapeutics*, 1900, p. 187.

BROMIDES.

Francis J. H. Coutts[1] gives an account of the use of large doses of the bromides in the treatment of the **Opium Habit.** The plan adopted is to completely stupify the patient for a number of days, during which time the opium is rapidly withdrawn, and the physical disturbance secondary to its withdrawal recovered from.

The treatment was hit upon by accident. Macleod[2] relates how, early in 1897, a neurasthenic lady addicted to morphine for nine years was given, accidentally, two ounces and a half of sodium bromide in something over two days. Profound sleep was induced, lasting several days, and when the effect wore off the craving for morphine had ceased, and with it the various disturbances which had led to its use. A few months afterward, a pilot who was addicted to morphine and alcohol agreed to try the effect of the treatment; and no suffering was experienced during the withdrawal of the morphine, the craving for which, as well as the alcoholic inclination, disappeared on recovery from the bromide sleep. The third case was one of acute mania. The fourth case was that of a Chinaman, who had been addicted to chloral for two years, and the result was perfect. In the fifth case the bromide sleep was used to check the uncontrollable vomiting of a neurasthenic woman, with alleged benefit. In the sixth case, a morphine and cocaine sufferer was cured of the craving for both drugs. In the seventh case, a woman was relieved of a nine years' morphine habit without suffering. In the eighth case, a physician who had been addicted to morphine and cocaine succumbed on the seventh day to an attack of double pneumonia which had supervened. In the ninth case, a married woman who had for years been addicted to the morphine habit was successfully relieved. In the tenth case, one of acute delirious mania, the patient died, as Macleod believes, through sepsis arising from a purulent disorder in the mouth and throat.

Church[3] lays down the following rules for this method of administration :—

The drug should be given only in the daytime; 120 grains of sodium bromide in half a tumbler of water, every two hours, until an ounce is given in the first day. The second day a smaller amount is given in the same way, and this may be sufficient, or it may be necessary to continue the doses in the same way on the third day. Macleod says the safe rule is to cease the administration of the bromide after twenty-four hours, when drowsiness is so profound that the patient cannot be roused, or, when aroused, is incoherent. If the sleep continues or becomes deeper, no more bromide will be needed.

During this treatment there is a tendency to aspiration pneumonia, so that feeding by the mouth becomes doubly dangerous. Any septic condition in the pharynx or in the antra communicating with the mouth contra-indicates the treatment. The poisonous effect of the bromide falls upon the respiratory and cardiac centres,

so that a weak heart or impaired pulmonary conditions would furnish reasons against the method.

REFERENCES.—[1]*Med. Chron.*, Jan., 1901 ; [2]*Brit. Med. Jour.*, July 10, 1897 ; [3]*New York Med. Jour.*, June 9, 1900.

BROMIPIN. (See "Iodipin.")

CACODYLATE OF SODIUM.

Gautier[1], in a paper read before the Académie de Médecine of Paris, stated that this drug administered by the hypodermic method, rendered good service in **Pulmonary Tuberculosis** in the first and second stages, **Osseous Tuberculosis, Diabetes, Neurasthenia, Chronic Paludism,** pronounced **Anæmia,** etc., etc. The principal counter-indication to its use lay in hepatic affections, cancer, congestion, hypertrophy, jaundice, cirrhosis.

The symptoms of interference were intermittent congestion of the face, pain in the abdomen, rarely fever. In women the cacodylic treatment hastens the return of the menses, and renders them more abundant. Sometimes even metrorrhagia is provoked if the agent is not suspended four or five days before the appointed time. One of the surest signs that the proper dose has been exceeded is the noises in the ears complained of by the patient.

The cacodylates can be employed for any length of time provided they be suspended from time to time. They acted by exciting the reproduction of the cells, in multiplying the hematin, in rejuvenating the tissues, and in conferring on the economy an extraordinary resistance to morbid affections.

Burlureaux[2] in a paper read before the Société de Thérapeutique, on the treatment of different affections by cacodylate of sodium, said that he employed exclusively the hypodermic method. Out of seventy-two patients treated, only two showed intolerance, and that for very small doses ; he attributed the sensations complained of by these patients to a certain idiosyncrasy.

A girl suffering from anæmia, with suppression of the menses for fifteen months, received daily injections for two months. At the end of that period the menses returned, while the improvement in strength and appetite was remarkable.

A woman, who complained of great lassitude, was treated twice a week for a year. The cacodylate acted as a powerful nervine tonic, so that when "run down" she applied of her own accord for an injection.

Another woman who had been operated on for a tumour of the breast three years previously, and who was much concerned about

a possible relapse, was treated by large doses of cacodylate of sodium with the hope of arresting the development of the cancer. At the end of six months, her weight was increased by fifteen pounds, her general condition was greatly improved, while her hair, which had fallen considerably, grew with great luxuriance. The nodule in the breast, however, was unaffected by the treatment.

A man who had suffered for two years from **Eczema** of both hands was cured after twelve injections.

A man suffering from **Parkinson's Disease,** for which all kinds of treatment were tried in vain, was persuaded to undergo the treatment. After six weeks his condition was considerably improved ; he was able to take exercise out of doors, while the trembling of the head and limbs had diminished.

The author said that it was not possible to promise improvement or cure, as in one patient the cacodylate treatment succeeded marvellously, while it failed in another without apparent reason. He regretted to say it did not give him much encouragement in tuberculous affections. He had treated more than thirty of these patients, but the result was only temporary. The affections which seemed to have been the most benefited were those arising from defective nutrition, and where the appetite and the strength were wanting.

The dose for injections was one grain per cubic centimetre (a full hypodermic syringe). By the mouth :—

℞ Cacodylate of Sodium, x grains | Simple Syrup, ℥v.
A teaspoonful three times a day in water.

E. Martin Payne[3] records two cases of **Carcinoma** treated with this drug. The most striking case was a patient aged forty-five, with malignant disease of the uterus. The cacodylate was given hypodermically in doses which were gradually increased up to 7·5 centigrammes daily, and there was marked improvement in the general condition.

Murrell[4] remarks that it is unfortunate that the lay press should have selected for recommendation as a popular remedy so lethal an agent. We are told that although it contains 55 per cent. of arsenious acid, it has none of the toxic action of that drug, and that it may be given by mouth in doses of from 20 to 40 centigrammes with perfect safety ! This is not the author's experience. On Dec. 9, he ordered for a patient, aged twenty-one, suffering from phthisis, 1 grain of cacodylate of sodium in a pill. On the following day there was distinct odour of garlic in the breath, and on the second day this was much more marked, was noticeable at some distance from the bed, and suggested the smell of phosphorus. On the third

day the patient vomited twice, and the odour of the breath was almost gangrenous in character. On the next day, after eleven doses had been taken, the patient was found to be suffering from symptoms of arsenical poisoning, including severe arsenical neuritis and inability to move the left leg. There was no diarrhœa, and there was no albumin in the urine. The odour of the breath disappeared within twenty-four hours of the suspension of the drug, and her general condition improved, but the loss of power persisted for some days. The drug was given in about one-third the minimum dose recommended by Gilliard, and other French physicians, and its effects were carefully watched, but in spite of all precautions these untoward effects ensued. Gautier states that it may be given hypodermically, in doses of three-quarters of a grain. It is a remedy which should be employed with considerable caution.

REFERENCES.—[1]*Med. Press*, July 31, 1901 ; [2]*Ibid.*, May 3, 1901 ; [3]*Lancet*, May 25, 1901 ; [4]*Ibid.*, Dec. 29, 1900 ; *Brit. Med. Jour.*, Dec. 22, 1900 ; Jan. 12, 1901.

CALCIUM IODATE.

William Mackie[1] speaks highly of this substance, both as an iodoform substitute and as a **Gastro-intestinal Antiseptic.**

Iodate of calcium is without taste or smell, though a slight iodine odour may be detected on opening a bottle in which it has been kept for some time. At 11.5 C. its solubility is about 1 in 380 parts of water. In solutions of even this dilution, however, it shows a wonderful degree of potency in inhibiting decomposition, in preserving food substances, and in checking fœtor. It has been used in almost all cases where iodoform is commonly used. It is not, however, applied to the cut surfaces of amputation flaps, though in several cases it has been freely powdered over the sutured edges after minor operations for diseased conditions. In all operations where surfaces are left to granulate, such as after curetting, it is used in powder dusted straight on to the cut surface. In no case when so used has there been the slightest evidence of any irritative or toxic effect. Even children do not complain of any smarting after its use. Adults, when questioned, reply that it smarts a little after the first one or two applications to a raw surface, but after the formation of granulations its application is painless. Its advantages as compared with iodoform are : (1,) The absence of smell in the substance itself ; (2,) The checking of fœtor ; (3,) The prevention of hyper-granulation ; and (4,) The inhibition of undue formation of pus. Further, it can be used where iodoform is inadmissible—for example, in aqueous solution for such purposes as a gargle or mouth-wash, and for washing out the bladder,

vagina, or uterus. It has been employed in bladder cases, and as a urethral injection, with advantage. For internal administration the dose is about 15 grains, and it may be given in aqueous solution.

REFERENCE.—[1]*Lancet*, Dec. 29, 1900.

CINNAMATE OF SODIUM. (See "Hetol.")

COCAINE.

Siegmund Moritz[1] states that the intensely bitter taste of cocaine, which, after application to the larynx or pharynx, may produce vomiting, is covered by the addition of saccharine. This addition for the same reason overcomes a most troublesome occurrence in intra-laryngeal operations after the application of cocaine solutions alone, namely, profuse salivation. Usually cocaine diminishes the flow of saliva, but occasionally—and, in the author's opinion, as a result solely of its bitterness—an increase of the secretion takes place, and the fluid not only collects in the mouth, but bubbles up from the pharynx and larynx, covering the laryngeal mirror, and thus preventing any operative manipulation. The author always uses cocaine sweetened by saccharine in applications to the larynx and pharynx, and sees no more of the troublesome occurrence mentioned.

The author has used eucaine β in 5 per cent. solutions with success for removal of tonsils. For intra-laryngeal operations he found that, in spite of the addition of saccharine, it often produced profuse salivation; the salivation in the case of eucaine being, no doubt, due to the dilatation of the blood-vessels. Anæsthesia following eucaine β does not last quite as long as that of cocaine; it has, therefore, to be applied more frequently during a prolonged operation, which is very disturbing. The hyperæmia caused by eucaine, with the bleeding immediately following the operative interference, makes this drug unsuitable for cases where a repeated introduction of instruments may be required. It is unsuitable for such operations as removal of multiple papillomata from the throat, but suitable for removal of single growths, or before the application of the galvanocautery to the turbinated bodies of the nose. In the latter case it is preferable to cocaine, as the ischæmia produced by this drug is followed in a few minutes by hyperæmia. The troublesome hæmorrhage often seen after operation on the turbinated bodies to which cocaine has been applied, is avoided by the use of eucaine. It is often difficult, after the application of cocaine, to get a snare round the mucous membrane of the turbinated, which it was intended to remove, as much of the swelling disappears temporarily as the effect of the drug, whilst eucaine makes this operation more easy by the

hyperæmia and the increase in the swelling which it causes. A further advantage which eucaine solutions possess is that they keep well, and can be boiled, and therefore sterilised, without causing decomposition of the drug.

The anæsthetic effects of cocaine, as well as those of eucaine β, are highly evanescent. In three or five, or at the utmost ten minutes, the anæsthesia has disappeared, and is sometimes even followed by a period of hyperæsthesia. The relief these drugs give in painful affections of the throat is of short duration.

REFERENCE.—[1] *Med. Chron.*, July, 1901.

COLEY'S FLUID.

In the *Medical Annual*, 1899, p. 22, an account will be found of the treatment of inoperable **Malignant Tumours** by injections of this fluid. Since then very little has been published on the subject, but Mr. Coley[1] now gives some results of the treatment of **Inoperable Sarcoma** with the mixed toxins of erysipelas and bacillus prodigiosus. It is not necessary to give his statistics in detail, but the conclusions at which he arrives are the following: (1.) The results warrant advising the treatment as a routine measure after all operations for primary sarcoma; (2.) While the treatment is not recommended in carcinomatous growths, it has been the experience of the author that in many cases the toxins exert a marked inhibitory influence in carcinoma, although it is rarely curative; (3.) The only cases of carcinoma in which the toxins are likely to prove of much value are those in which they are used after primary or secondary operation as a prophylaxis against recurrence; (4.) The author still believes that the action of the toxins upon malignant tumours can be explained only upon the theory that such tumours are the result of some infectious micro-organism.

Prof. Robert B. Wild,[2] of Manchester, contributes an admirable paper on the treatment of malignant growths by Coley's fluid. During the last four years he has treated eight cases of inoperable cancer by this method. All the patients were kept under observation until death, and in six cases the diagnosis was verified by *post mortem* examination. The author does not consider that the results obtained so far justify the trial of Coley's method in any operable cases of malignant disease, whether carcinomatous or sarcomatous; it only wastes valuable time, and may render subsequent successful operation impossible. In cases of inoperable carcinoma and epithelioma there is no evidence of any permanent benefit, and the treatment is by no means free from danger. In the absence of any other means

of effective treatment, a careful trial of Coley's fluid is justifiable in cases of inoperable sarcoma, especially the more rapidly growing forms. A limited number of successful cases have been reported in which the disease was of this type, and other cases in which there was temporary improvement. Further researches upon the after-effects produced by erysipelas are desirable, as it appears by no means certain that the effects produced by the toxins are identical with those which result from an attack of genuine erysipelas.

REFERENCES.—[1]*Phil. Med. Jour.*, May 25, 1901; *Brit. Med. Jour.*, July 6, 1901; [2]*Med. Chron.*, March, 1901.

DIGITALIS.

In the *Medical Annual*, 1901, p. 25, some space was devoted to a consideration of the physiological action of this drug, and the discussion has since been continued by many writers.

William Henry Porter[1] points out that to understand thoroughly the action of any drug its chemical composition must be known. Five glucosides had been isolated from digitalis: (1,) Digitalein; (2,) Digitoxin; (3,) Digitonin; (4,) Digitalin; and (5,) Digitin. They are all oxidizable substances, and yield, as the result of their oxidation-reduction heat, carbonic acid and water. Only four of these glucosides actively influence the animal economy, and while three have actions in common, the fourth is absolutely antagonistic to the other three.

The following are the author's conclusions: (1,) The chemical composition of digitalis is complex, some of its active principles antagonizing others.

(2,) The various preparations of digitalis differ widely in their composition and action.

(3,) The so-called cumulative action of digitalis is due to its contracting the arterioles and shutting off nutrition.

(4,) It is both a useful and a dangerous remedy, and has a very limited range of usefulness.

(5,) It is of use only in lesions of the mitral valve, and then only for a short time, and should be discontinued as soon as these have been overcome.

(6,) It is of value as a diuretic only where there are low arterial tension and engorgement of the kidney.

(7,) Digitalis decreases the excretory action of the normal kidney and impairs its nutritive activity.

Leonard Weber[2] takes exception to the statement that the infusion of digitalis is of but little value. His personal experience with it has been satisfactory, using the fresh English leaves made

into an infusion of the strength of ½ a drachm to 6 ounces of water. He has been seldom disappointed with it, and has obtained as good results as with the powder.

Arnold and Wood[3] have investigated the question whether any of the proximate principles found in digitalis represent the therapeutic activity of the crude drug, confining themselves to an examination of the comparative value of the tincture of digitalis, Merck's digitalin, which is readily soluble in water, and of digitoxin (Merck's). The experiments were made on dogs, and the drugs were injected intravenously. They conclude that both digitalin and digitoxin produce the full effects of digitalis on the circulation. All three drugs stimulate the cardio-inhibitory mechanism both centrally and peripherally. The slowing of the heart is prevented or abolished by the injection of atropine, and is not wholly prevented by cutting the vagi.

All three cause a rise of blood pressure, due to constriction of the blood-vessels, and a simultaneous increase in the force of the heart beats. In exceptional cases, where the strength of the cardiac beats does not increase in proportion to the peripheral constriction, the blood pressure may fall. Toxic doses cause a great increase in the pulse-rate, with a sudden rise in the blood pressure. This is due to paralysis of the cardio-inhibitory apparatus, since stimulation of the vagus at this period does not produce the usual slowing of the pulse-rate. Very large doses of any of the three cause the heart to stop suddenly in diastole. This is due to a direct paralysis of the cardiac muscle, and not to excessive vagus stimulation; it is not prevented by previous paralysis of the inhibitory mechanism by atropine, and the vagi are always paralysed in the later stages of poisoning. The pharmacological action of both digitalin and digitoxin resembles closely, if it is not identical with, that of tincture of digitalis, and it is therefore surprising that digitalin, which is a perfectly uniform and stable body, should have the reputation of being clinically "uncertain."

The authors believe that the explanation of the discrepancy between the results of experiment and of clinical experience is that digitalin is given clinically in too minute doses. While comparative experiments on dogs show that gr. ¼ of digitalin corresponds to only about 16 minims of the tincture of digitalis (0·15 grm. of the leaves), the dose of digitalin usually recommended is $\frac{1}{60}$ to $\frac{1}{40}$ gr. Wenzel and von Starck have reported good results with digitoxin, in doses of ¼ to ¾ mg. several times a day; but the authors consider that it is too irritant for human medication. When given by the mouth it

is liable to upset the stomach, and when injected hypodermically to cause abscesses. It is very insoluble, and, being slowly absorbed and irregularly eliminated, has a tendency to a cumulative action.

Joseph W. England[4] speaks well of the "tincture of fat-free digitalis," a preparation originated by him some years ago. It is made by exhausting freshly-ground digitalis leaves with purified petroleum benzine, drying the residue thoroughly by exposure to air, percolating with diluted alcohol, and neutralising the percolate with ammonia water; the strength is the same as the official tincture of digitalis.

Fifteen cases were treated with the fat-free tincture, and with the official tincture, and the time, in minutes, required to induce first effects and full effects, along with the work and beats reduced, were noted. Practically, the primary effects of the fat-free tincture were manifested in fifteen minutes, and the maximum in forty-five minutes; while with the official tincture primary effects were manifested in thirty minutes and maximum in sixty minutes. The duration of the effect was the same in both cases—thirty minutes. The pulse reduction in work done was slightly greater with the fat-free tincture than with the official. The fat-free tincture was more rapidly absorbed than the official. When the tincture was given hypodermically the pulse reduction seems to have been greater with the fat-free tincture, though not extending over any greater length of time.

The author says that, from a therapeutic point of view, it is impossible to believe that a preparation that yields physiological effects in about thirty to sixty minutes, has for its most important constituent a proximate principle (digitoxin) whose physiological effects are not manifested in from six to thirty-six hours.

REFERENCES.—[1] *Med. Rec.*, May 12, 1900; [2] *Ibid*; [3] *Amer. Jour. Med. Sci.*, Aug., 1900; *Brit. Med. Jour.*, Nov. 3, 1900; [4] *Amer. Jour. of Pharm.*, July, 1899; *New York Med. Jour.*, April 6, 1901.

DIONIN.

An account of the origin and composition of this substance has already been given[1], with an abstract of Korte's[2] paper.

Bloch[3] considers that its power of **Relieving Pain** is very great, and gives it in doses of $\frac{1}{6}$ grain, either subcutaneously or by mouth.

Fromme[4] has employed it in cases of **Morphine Habit,** and finds that there is no accumulative action.

Heinrich[5] praises its physical properties, and states that as the solutions are neutral, they cause no pain and no irritation when injected. In the treatment of the morphine habit he recommends

the administration of one-third more than the dose of morphine usually taken.

Heim[6] finds that it is much more efficacious in producing **Sleep** than codeine.

Higier,[7] of Warsaw, used it almost exclusively in chronic severe cases in which the **Cough** was exceedingly troublesome both night and day, and the usual narcotics had been ineffectively employed. With the exception of two cases of bronchial asthma, the majority of the cases were of advanced tuberculosis of the lungs, with or without affected larynx or pleura, the balance being chronic cases of bronchitis with pulmonary emphysema. In almost every case of tuberculosis the excellent action of the dionin was recognised. A number of the patients demanded a renewal of the remedy, as it afforded them quiet sleep, suspended the troublesome cough, diminished the dyspnœa, and rendered expectoration easier.

Hoff[8] also speaks of its value in relieving the cough of phthisis and in inducing sleep. Ranshoff,[9] Sturmhofel[10] and Freimuth[11] in the main confirm these statements. Schroder[12] found that in some instances the action of dionin was more favourable and more marked than that of equal doses of codeine; it produced much the same effect as we are accustomed to see produced by corresponding doses of morphine, and without causing the disagreeable effects of morphine. Increased difficulty of expectoration and tendency to constipation were noticed only in a few instances, and in one case there was increased perspiration. Winternitz[13] thought that it reduced the irritability of the air passages, without affecting the respiratory centre.

Krijewski[14] has made dionin the subject of his graduation thesis. He regards it as superior to codeine. It is seldom necessary to give more than $1\frac{1}{5}$ grain in twenty-four hours, and commonly from $\frac{1}{3}$ to $\frac{3}{5}$ of a grain will prove sufficient.

A. Darier,[15] Paris, thinks his experiments have demonstrated that in dionin we possess an analgesic capable of relieving for many hours the most violent **Ocular Pain** in iritis, corneal ulcer, and glaucoma. He has employed it in 5 per cent. solution, instilled into the conjunctival sac or injected beneath the conjunctiva. The 10 per cent. solution, he finds, is not stable. He has also used it by placing the powdered drug in contact with the conjunctiva. However applied, it at first causes severe burning pain and œdema of the part. Daxenberger[16] reports two cases in which the severe reaction produced by applications of this drug continued as long as thirty-six hours. A. Graefe,[17] from a trial of dionin in two hundred cases,

finds its influence is favourable in all affections of the cornea (except in the keratitis due to sarcoma), in conjunctival catarrh, acute or chronic, and in disease of the vitreous. It is also valuable associated with atropine in the treatment of iritis and irido-cyclitis, and probably also chorio-retinitis. Wolffberg and Graefe find that it has a disadvantage in ophthalmic practice, inasmuch as it produces a temporary conjunctivitis and chemosis. This effect does not occur when a tolerance to the drug has been established, and, although it cannot take the place of cocaine for the removal of foreign bodies, it has been found valuable in the treatment of various diseases of the cornea. Other observers state that dionin exerts a powerful influence over the nutrition of the eye, and particularly over the lymph-circulation of the parts; and, so far, the only injurious effects recorded are the pain which occurs in some cases, and the prolonged inflammatory reaction.

For Prof. Marshall's observations, see "Heroin."

REFERENCES.—[1]*Med. Ann.*, 1901, p. 27; [2]*Therap. Monat.*, Jan., 1899; [3]*Ibid.*, Aug., 1899; [4]*Berl. klin. Woch.*, No. 14, 1899; [5]*Wien. Med. Blatt.*, No. 11, 1899; [6]*Klin. Therap. Woch.*, No. 46, 1899; [7]*Deut. Med. Woch.*, No. 44, 1899; [8]*Aertzl. Centralanz.*, No. 31, 1899; [9]*Psych. Woch.*, No. 20, 1899; [10]*Ibid.*, No. 16, 1899; [11]*Ibid.*, No. 10, 1899; [12]*Therap. der Gegenw.*, March, 1899; [13]*Therap. Monat.*, Sept., 1899; [14]*Gaz. hebd. de Méd. et de Chir.*, Oct. 21, 1900; [15]*Clin. Ophthal.*, Nos. 6 and 7, 1900; [16]*Woch. f. Therap.* und *Hyg. des Anges*, May 10, 1900; [17]*Deut. Med. Woch.*, March 22, 1900.

DORMIOL.

Dormiol, or amylene chloral, is a combination of 1 molecule of chloral with 1 molecule of amylene hydrate. It occurs as a colourless, oily fluid, with a camphoraceous odour, and a peculiar, though not unpleasantly pungent, cooling taste.

Fuchs and Koch[1] found that about 24 per cent. more chloral in the form of dormiol could be borne than when taken as uncombined chloral hydrate, this lessened toxicity being referable to the gradual occurrence and slow progress of disunion of the preparation.

The narcosis is not so deep as to involve any risk from asphyxia where secretion accumulates in the bronchial tubes. In those cases of severe **Pulmonary Tuberculosis** to whom dormiol was administered, the soporific effect was a benefit to the patients, and in spite of the good sleep produced, they coughed and expectorated as usual, but soon again fell into a restful sleep.

In cases of **Neurasthenia,** as well as in other nervous and mental diseases, dormiol acted as a safe and effective hypnotic in doses of

6 to 9 minims, occasionally advanced to 18 minims, and in one case to as much as 54 minims in one day, producing often a sedative effect prolonged after the night's rest.

In the **Insomnia** of age and chronic disease, as well as in **Arterio-sclerosis,** the drug, though given continually with benefit, results in no harm and does not give rise to habituation.

Dormiol can be given in capsules containing 6 minims, or as much as 36 minims at one dose in exceptional cases. It has no pernicious by-effects or consequences, and does not have any cumulative action It is well borne by the stomach, and on account of its slow absorption is safer and more continuous in its action than most other soporifics.

Schultze,[2] of Andernach, confirms these statements.

REFERENCES.—[1]*Munch. Med. Woch.*, 1898, p. 37 ; *Merck's Arch.*, Oct., 1900 ; *Treatment*, Feb., 1901 ; [2]*Neuralog. Centralb.*, No. 6, 1900.

EUCAINE. (See " Cocaine.")

FORMIC ALDEHYDE.

Formic aldehyde, an oxide of methylene, is a gaseous substance, the molecular composition of which is CH_2O, or one atom of carbon and one atom of oxygen united by two atoms of hydrogen in each molecule. It is soluble in water, producing about a 40 per cent. solution, in which form it is generally known as formalin. Upon evaporation of the solution beyond the point of saturation a re-arrangement of the atoms takes place within the molecule, the composition of which now is $C_3H_6O_3$, known as paraform, a white crystalline substance which, it will be observed, forms a molecule of twelve atoms instead of four atoms, as in the case of the gaseous substance.

A. A. Young[1] points out that when paraform is heated in an open vessel it vapourises, but the vapour on cooling deposits as before crystalline paraform by sublimation. When formaldehyde is heated in an open vessel, formic aldehyde, the germicidal agent, is given off vapourised, and so far as known is not redeposited as paraform ; but upon the sides of the container, by slow evaporation, this polymeric modification is found deposited. This phenomenon indicates a chemical change, which means new properties and characteristics ; experimentation so far indicates the truth of this assumption. Paraform is therefore regarded by the writer as a new formation, not necessarily to be compared with formaldehyde, though one may be formed from the other by synthesis or analysis. It is a mistaken notion that if formaldehyde be a germicidal agent, paraform must be so also.

The author points out that although formic aldehyde, or formaldehyde, was discovered as early as 1863, little was known of its properties until recent years, the use of formalin being confined to the microscopist, who employed it as a hardening and preserving agent. In ordinary pathological specimens the outlines in each are clear and strong, there is no shrinking in any part, each specimen is more firm and hard than found in its natural state, and the natural colours are not affected.

If formaldehyde possesses such marked properties as a preservative and hardening agent, it must be a **Germicidal Agent** as well. It has been found by experiment that solutions as attenuated as 1 to 100,000 destroy the less resistant germs, while the more resistant ones are destroyed when immersed in a solution of 1 to 1,000. With solutions of the latter strength even the living human skin (example, the hands) is not appreciably affected, though the hands may remain in the liquid for a considerable time. Although formaldehyde possesses such marked hardening properties, it exerts no particular influence over mucus or albumin, save to render these substances antiseptic. Of any other specific action but little is known.

The gas when liberated has the properties of diffusibility and penetrability in a marked degree, and is admirably adapted for disinfecting purposes, especially of small rooms and exposed objects therein ; but it will not permeate impermeable objects, and because of this failure should not be condemned, though some writers have so condemned it. Its penetrability, its effectiveness as a germicide, and its comparative harmlessness render it a valuable therapeutic agent.

P. A. Dubois[2] mentions various generators and volatilising apparatuses—Trillat's, Novy's, Kinyoun's, Schering's, etc. A practicable and easily procured article for extemporaneous use is an ordinary can of the kind used for filling coal-oil lamps, to which a 2- or 3-feet piece of rubber tubing is attached, which has an end tube of brass small enough to go through a keyhole ; this, placed on a tripod and heated, is all that is necessary to disinfect properly ; strong heat must be used so as to vapourise quickly. The 40 per cent. solution should be mixed with an equal bulk of saturated solution of boric acid, or a 2 per cent. solution of either borax, chloride of calcium, or chloride of sodium, all of which prevent polymerisation ; about 20 ozs. of the mixture are necessary to each 1,000 cubic feet. This does not preclude previous scrubbing of the room and furniture with a solution of formaldehyde, nor clothes being soaked in it for twenty-four hours. The room must be kept closed for at least eight hours.

A useful deodorizer for a patient's room can be made by mixing equal parts of 40 per cent. solution of formaldehyde and alcohol, adding a few drops of oil of lavender; this, sprinkled on the floor in small quantities, causes no inconvenience, and is very effective Oppermann uses a 60 per cent. solution of the gas in methylic alcohol, calling it holzin. Trillat adds chloride of calcium and names it formochloral. Rosenberg mixes menthol with formaldehyde, calling it holzinol. Schlossman thinks that glycerin adds to its antiseptic properties.

F. Alba and A. Rondelli[3] find that the vapour is good as a superficial disinfectant only for smooth and comparatively clean surfaces, like polished furniture; if visible dust is present, no disinfection takes place. The surface of the floor is not affected, nor is the surface of upholstered articles always equally sterilised. The same holds true of walls and of the interior of mattresses, rolled-up carpets, etc. Formic aldehyde disinfection should always be followed by bichloride of mercury and steam disinfection. At least ten hours must be allowed for disinfection, and rooms so disinfected should not be inhabited for twenty-four hours, so that all the vapour may be dissipated. Ammonia may be employed to neutralise the vapour.

Alfred C. Jordon[4] thinks that glycerin should be used instead of water to convey the formic aldehyde solution to the required part. He uses a mixture in glycerin, from 1 to 4 per cent. Although the mixture will keep without much diminution in strength for several weeks in a well-stoppered bottle in a cool place, it is better to prepare it fresh for use by mixing from 1½ to 5 minims of formalin with 2 fluid drachms of pure glycerin. This preparation is useful in at least four different ways: (1,) As an application to the throat; (2,) As a mouth-wash; (3,) As an application to the skin; and (4,) As a urethral injection.

As an Application to the Throat.– An ordinary pharyngeal brush is employed. A single application can be absolutely relied upon to kill every micro-organism with which it comes in contact. The glycerin spreads readily over the surface beyond the immediate limits of its application, into the follicles of the tonsils and into the deep layers of the mucous membrane. In **Follicular Tonsillitis,** in the early days, while there are no deep collections of pus, formic aldehyde in glycerin (2, 3, or 4 per cent.) is a specific. After a single thorough application the temperature falls to normal within a few hours, and remains normal. The application is usually attended by a little soreness lasting only a few hours. For from half an hour to an hour after the treatment the patient should not be allowed to drink. After

this a simple gargle, such as chlorate of potassium, is all that is necessary. In diphtheria, in cases where the membrane is confined to the pharynx, the same mixture is equally successful; in most cases, however, there is membrane in situations inaccessible to a brush; in such cases it is of little use. In scarlet fever, where the throat condition is but a small part of a general disorder, one cannot expect much good from formalin; but even here 2 per cent. in glycerin every second or third day is certainly as good as any other local application.

As a Mouth-wash.—In **Aphthous Stomatitis** and in parasitic stomatitis (thrush) a single application of formic aldehyde in glycerin, 2 per cent., should be made, followed by the use of the glycerinum acidi borici of the British Pharmacopœia. In **Ulcerative Stomatitis** a single application does not appear to do much good. Combined with iodine and with β-eucaine (the latter as a local anæsthetic) in the following proportions, a useful mouth-wash is afforded: 1 per cent. of formic aldehyde, 2 per cent. of iodine, and 2 per cent. of β-eucaine, in glycerin. With this and the internal administration of chlorate of potassium good results are obtained. In **Gangrenous Stomatitis** (cancrum oris) 4 per cent. formic aldehyde in glycerin might penetrate sufficiently deeply to put a stop to the disease. **Tuberculous Ulcers** of the pharynx, mouth, tongue and lips, occurring as they do in the broken-down subjects of advanced phthisis, are never hopeful cases to treat. They are always liable to re-infection from the lungs, and therefore repeated applications are necessary, but these repeated applications are not well tolerated on account of the great tenderness of the ulcers.

As an Application to the Skin.—Formic aldehyde may be thus employed in all parasitic diseases, but especially in **Tinea Tonsurans** (ringworm). The whole area is thoroughly cleaned by means of turpentine, followed by soft soap and water to remove grease, and 4 per cent. formic aldehyde in glycerin is rubbed in by means of a piece of lint soaked in it. If there is much inflammation a piece of lint soaked in the dressing is simply applied to the surface and left for a few hours, protected by a layer of wool. This application never requires to be repeated. A little boric or zinc ointment or lead lotion will complete the cure in a few days.

As a Urethral Injection.—In one case of **Acute Gonorrhœa** the author injected 1½ drachms of 1 per cent. formic aldehyde in glycerin, with the result of completely and permanently curing the case. But for three days after the injection there were considerable pain and difficulty of micturition, due, no doubt, to swelling of the mucous

membrane. For this reason he is not confident in recommending its general use as a urethral injection.

Since the introduction of formic aldehyde as a remedy for **Tuberculous Disease of the Lungs** (see *Medical Annual*, 1900, p. 26) many papers on this subject have been published, and excellent results are recorded. (See also "Phthisis.")

The following is a list of some of the combinations of formaldehyde in common use :—

Amyloform is a white, colourless powder, made by subjecting starch to the action of formaldehyde ; is insoluble in most media, sterilisable and non-poisonous, and used as a dusting powder.

Glutol, or *Formacoll*, as produced by Schleich, is made by subjecting isinglass to the vapours of formaldehyde ; it is a coarse powder.

Dextroform is produced by the action of formaldehyde on dextrin. It is soluble in water and glycerin. A 10 to 20 per cent. solution of it is useful in gonorrhœa.

Formaldehyde-tannin-albuminate is made by subjecting tannin albuminate to formaldehyde ; the idea is to render the compound more resistant to the action of the gastric juice. It is split up into its three constituents in the lower intestines.

Formaldehyde-casein (formalbumin) is an inodorous, tasteless, coarse, yellow powder, and is used as a surgical antiseptic.

Formin, also known as *Urotropin*, is a combination of formaldehyde and ammonia, and is used to increase excretion of uric acid and as a general urinary antiseptic. Its chemical name is hexamethylenetetramine ; formula $(CH_2)_6N_4$.

Saliformin is a salicylate of formin, soluble in water and alcohol.

Formalid is a ready-made mixture. Its formula is not given.

Formopyrine is made by the action of formaldehyde solution on antipyrine solution. White crystals are obtained insoluble in cold, but soluble in hot water, and forming salts with acids.

Formoforin consists of formaldehyde, 0·18 per cent. ; thymol, 0·10 per cent. ; zinc oxide, 34·44 per cent. ; starch, 65·28 per cent.

Geoform and *Creoform* are formed by interaction of guaiacol or creasote respectively, with formaldehyde. They have no odour, no taste, are non-toxic and non-irritant ; soluble in alcohol, ether, benzol, potassium hydrate ; insoluble in water and benzine. They are possessed of powerful antiseptic properties.

Eka-iodoform is iodoform containing $\frac{1}{20}$ per cent. of paraformaldehyde, which is said to dissociate in presence of iodoform with formation of gaseous formaldehyde.

Formatol (composition not given) is a disinfectant dusting powder containing formaldehyde.

Euformol is an antiseptic mixture, containing oil of eucalyptus, oil of wintergreen, thymol, menthol, boric acid, fluid extract of wild indigo, and formaldehyde.

Galloformin is a mixture of gallic acid and formaldehyde; it is unstable, said to yield the gas under the influence of acids or alkalies. It is in hard, opaque needles, soluble with difficulty in water, alcohol, ether and glycerin; insoluble in benzol, olive oil; decomposed by heat.

Glycoformol is a mixture of formaldehyde and glycerin.

Iodothymoform, or *Iodb-thymol-formaldehyde*, is made by heating thymol with formaldehyde, precipitating with strong hydrochloric acid, washing and dissolving in alcohol, to which a solution of iodine and potassium iodide is added, producing a yellow precipitate, nearly odourless; soluble in alcohol, ether, chloroform, benzol, olive oil; insoluble in water and glycerin. Its melting point being high, it can be sterilised by heat.

Lanoform is an ointment containing 1 per cent. of formaldehyde.

Polyformin is made by dissolving resorcin in aqueous solution of formaldehyde and adding excess of ammonia. It is an odourless, colourless, yellowish-brown amorphous powder used as a bactericide.

Polyformin-soluble is a combination of 2 molecules of resorcin with 1 of hexamethylene-tetramine, and occurs in white crystals; soluble in water and alcohol; insoluble in benzol and oils. Used externally in skin diseases; internally as an antiferment and diuretic.

Protogen is an albuminoid compound, not coagulable by heat; obtained by the action of formaldehyde on serum or egg albumin. It is a dietetic food, and may also be used in the form of an enema.

Steriform Chloride is composed as follows: Formaldehyde, 5; ammonium chloride, 10; pepsin, 20; sugar of milk, 65.

Steriform Iodide has the same composition with the exception that the ammonium chloride is replaced by ammonium iodide.

Sterisol is an antiseptic preparation made up of formaldehyde, potassium phosphate, sodium chloride, lactose, and water.

Tannoform, or *Methylene Di-tannin*, is obtained by the addition of formaldehyde to an aqueous solution of tannin, and precipitated with hydrochloric acid. Tannoform is insoluble in water, soluble in alkalies. Used externally in dermatology; internally for intestinal catarrh.

Quinoform, *Quercriform*, *Quebrachinoform*, *and Krameroform* are produced by the same process as tannoform on the respective cinchona, oak, quebracho, and rhatany tannins.

Tannopine, or *Tannon*, is a condensation product of 13 per cent. hexamethylene-tetramine and 87 per cent. tannin. This forms a light-brown powder, tasteless and somewhat hygroscopic; insoluble in water, weak acids, alcohol and ether; soluble in weak alkalies. Used in chronic enteritis and typhoid fever.

Thymoform is a product of the reaction between thymol and formaldehyde; it occurs in a yellowish, tasteless powder with a slight odour of thymol.

Several cases of **poisoning** by formalin have been recorded. The best antidote is ammonia, well diluted with water. Formic aldehyde combines with ammonia to form hexamethylene-tetramine (urotropin), which is neither a local caustic nor a general poison.

REFERENCES.—[1]*Therap. Gaz.*, Feb., 1901; [2]*Pacific Med. Jour.*, Jan., 1901; *Merck's Archiv.*, Feb., 1901; [3]*New York Med. Jour.*, Nov. 10, 1900; [4]*Lancet*, Feb. 16, 1901; [5]*Med. Press*, Aug. 21, 1901.

GELATIN INJECTIONS.

There is no condition in surgery in which such wide and divergent opinions have been held as in the case of **Aneurysm**. The effect of treating this affection with injections of gelatin[1] deserves more than passing notice. One of the first results is that the tumour becomes firmer, and the expansibility is lessened. There is diminution in the amount of pain, symptoms indicating pressure on surrounding structures become ameliorated, and the patient is enabled to breathe more easily. The experience of those who have practised this method shows that great pain is often complained of in the region where injection has taken place. Care must be exercised to secure absolute sterility of the gelatin, that substance being a good medium for the development of micro-organisms. In those instances where a *post-mortem* examination has been made large organised clots have been found filling the cavity of the aneurysm, ascribed in a great measure to the action of the gelatin.

Mariani[2] believes that 2 per cent. solutions of gelatin in physiological saline solution, when injected hypodermically, are absorbed in proportion to the amount injected.

Freudweiler[3] is certain that injections of gelatin are not so free from danger as is generally supposed. They have been followed by the appearance of boils, and by the production of thrombi in undesirable positions, such as the carotid arteries. He also reports two cases where the gelatin aggravated the disease for which it was given, namely, **Hæmorrhagic Nephritis**. The urine became smoky, and contained numerous red corpuscles and a quantity of brown detritus. In the filtered urine methæmo-

globin was present. Besides the increase in the hæmaturia and the addition of hæmoglobinuria, the quantity of albumin steadily rose. Though the hæmaturia and the hæmoglobinuria gradually disappeared, the quantity of albumin remained permanently double as much as it was before the injections.

In the second case the injection was followed by an intense hæmaturia and hæmoglobinuria, with an increase in the albuminuria. Eight days later the urine had returned to the condition in which it was before the injection, and no permanent damage resulted.

These cases indicate that diseased kidneys are an absolute contraindication to the employment of gelatin as a hæmostatic.

S. Theresi[4] reports a case of **Werlhof's Disease** and one of **Enterocolitis** in which he used gelatin solutions with success. In the first case he used the technique described by Pensuti: A solution of Merck's golden label gelatin, 30 per cent., is filtered into a receptacle, and kept at 100° C. by contact with steam. One centigramme ($\frac{1}{16}$ grain) of carbolic acid is then added to each cubic centimetre (15 drops) of the solution, and 3 centimetres are injected with a hypodermic syringe into the muscular masses of the gluteal region. In the case of Werlhof's disease, after three days the hæmorrhages in the gums and in the skin began to diminish, and disappeared completely in nine days. The injections were given two or three times a day. In the case of enterocolitis he used two enemas daily containing a 5 per cent. gelatin solution and, in addition, the intramuscular injections according to the method of Pensuti. Improvement was noticed on the second day, and on the twelfth day the patient was completely cured. The writer's conclusions are as follows: Solutions of gelatin are absorbed by the blood and increase its coagulability. They may be used with advantage in aneurysms, especially in the sacculated varieties, and in the diseases that are accompanied by hæmorrhagic manifestations.

[Werlhof's disease, it may be mentioned, is purpura hæmorrhagica—very severe purpura with hæmorrhages from the mucous membranes.—Ed.]

References.—[1]*Med. Press*, Nov. 28, 1900; [2]*Il Policl.*, Jan., 1901; *Brit. Med. Jour.*, Feb. 16, 1901; [3]*Cent. f. inn. Med.*, July 7, 1900; [4]*New York Med. Jour.*, Oct. 27, 1900.

GLUCOSE.

It is unfortunate that the term "glucose" is employed in a dual sense. It is used by physiologists as a synonym for dextrose or grape sugar, and by manufacturers to designate what may be called "commercial glucose." The first kind of glucose is one of the sweet prin-

ciples of fruits, and the chief constituent of honey. It is prepared on a large scale by the action of an acid on starch, the acid being subsequently removed by the addition of an alkaline base. Much glucose is of American origin, the raw material employed being corn-flour, and the conversion completed by the action of steam under pressure.

Commercial glucose is not a simple substance, but consists approximately of dextrin, 25 per cent.; maltose, 20 per cent.; dextrose, 40 per cent.; water, 15 per cent. There may be slight differences in percentage composition in different specimens.

Murrell[1] advocates the use of the commercial glucose as a **Food** in the convalescence of acute illnesses, in wasting diseases, such as phthisis, and in the treatment of ill-nourished infants. The usual dose is 2 drachms three times a day, but more may be given. In the case of children it is best given by itself; for adults it is conveniently administered in a cup of black coffee. The urine of patients taking glucose is not reduced by Fehling's solution, showing that it is entirely absorbed, and not eliminated by the kidneys. The author points out that commercial glucose is not only a food, but a most excellent food. Two of its constituents, maltose and dextrose, are sugars, and are of the greatest possible value in the animal economy. The third constituent, dextrin, is half-way between starch and sugar, and as soon as it comes in contact with the saliva and the secretions of the pancreas and intestines, is converted into sugar. Much has been made of the fact that there are two varieties of dextrin, erythro-dextrin, which gives a red or violet colouration with iodine; and achroo-dextrin, which does not give that reaction. It has been suggested that a small proportion of the dextrin—presumably the achroo-dextrin—is not absorbed, and is consequently of no value as a food; but the experiments on which this statement is made are of little value, seeing that they were the result of observations conducted in glass test-tubes, while in the human body the rapidity of the diastatic action is much increased by the removal of the finished products, maltose and dextrose, which takes place normally in the intestines, but for which no provision is made in the laboratory experiments. Even if an infinitesimal portion escaped conversion by the secretions of the mouth and pancreas, physiologists are now agreed that any remnants of dextrin not so acted on are absorbed by the cells which line the intestines, and are by them converted into maltose and dextrose before being turned into the blood stream. From this it follows that not only is glucose a good food, but that it is a valuable nutritious agent comprising all the best qualities of the carbo-hydrates.

Otto F. F. Grunbaum[2] finds that carbohydrates in the form of starch or glucose are readily absorbed when given in solution by the rectum. If the strength of the solution is less than 15 per cent., it is well retained and not irritating. As much as 90 grammes may be introduced during the twenty-four hours. The author finds that 30 grammes are absorbed without the production of glycosuria.

REFERENCES.—[1]*Med. Press and Circ.*, April 24 and May 1, 1901 ; *Med. Brief*, July, 1901 ; [2]*Brit. Med. Jour.*, April 6, 1901.

HEPATIC EXTRACT.

M. M. Gilbert and Carnot[1] have employed extract of liver in the treatment of certain diseases with success. Their most successful results have been in **Diabetes Mellitus,** atrophic **Cirrhosis** with ascites, and in some cases of **Gout.** They have also used gastric extract, and extract of pancreas. The investigation is not yet sufficiently complete to admit of any positive statement as to the future of these preparations.

REFERENCES.—[1]Gilbert and Carnot : *L'opotherapiè*, Masson, 1898 ; Paris. Gilbert and Carnot : Sect. Therap., xiii. Congrès Internationale de Médecine. Gilbert and Chassevant : *Ibid.* E. Vidal : *Rev. de Chir.*, Oct. 10, 1900, pp. 521-527.

HEROIN.

Some account of the action of this drug will be found in the *Medical Annual*, 1900, p. 27.

Horton Brown and Duncan Tomkins[1] find that the hydrochloride give the best results. The dose is from $\frac{1}{12}$ to $\frac{1}{6}$ grain, repeated if necessary. It was first used in medicine as a substitute for codeine for **Coughs** and conditions attended with cough, and met with unqualified success. It has also been used in all pulmonary affections, **Cardiac Diseases,** angina pectoris, **Diabetes, Neuralgia, Asthma, Narcotic Inebriety,** and advanced **Arterio-sclerosis,** with success worthy of mention. It has also been used as a substitute for morphine, in the cure of chronic opium poisoning, and in tampons for local application in gynæcological practice. As a **Hypnotic** it is of value in producing sleep peaceful in character, yet free from disagreeable after-effects. As an **Antispasmodic** it has also been used.

The authors say that heroin is a safe, reliable **Analgesic,** and one which can be repeated if necessary without producing habit or doing harm in any way.

M. G. Kandel[2] expresses his astonishment that a relatively small dose, even $\frac{1}{2}$ a grain, not only diminishes, but even prevents the suffering which follows the cutting off of morphine. In rapid withdrawal of morphine this substitute is efficacious. It is preferable

to the method of Erlenmeyer, as in place of diminishing quantities of morphine this drug is substituted, and the patient escapes suffering. Habituation and influences upon the digestive and sexual organs are less.

Guinard[3] and Saint Martin[4] have investigated the physiological action of the drug on various animals. By far the best summary, not only of these experiments, but of the whole action of heroin, is given by Prof. C. R. Marshall,[5] of St. Andrews. He compares the action of morphine and heroin, and points out that with so much conflicting evidence it is difficult to decide as to the exact action and therapeutic value of these drugs. That the action of morphine is modified by the introduction of acid and alkyl groups cannot be doubted, or that the influence is a weakening of the narcotic and an increase in the convulsant effects. Heroin seems to be the most powerful in this direction. In rabbits, in certain doses, it undoubtedly affects (stimulates ?) the respiratory centre ; in somewhat larger doses it certainly depresses it. On this point most are agreed. The main question, however, is the efficiency of the respiration. Does increased depth of inspiration counter-balance the increased slowing ? As measured by the air expired per unit of time, it certainly does not. But, with an increase in the volume of the individual inspirations, this is not a correct indication of the respiratory efficiency. In the latter case there is a greater excursion of air and a better exchange. Within certain somewhat narrow limits, it is conceivable that, even with diminution in the amount of air respired per minute, there may be, with deeper inspirations, a better æration of the blood, and this notwithstanding the fact that as regards man the frequency has been proved to be of most importance.

Unfortunately the controversy which has centred around heroin has been complicated by an under-current regarding the relative merits of heroin and dionin. Both are recommended as substitutes for codeine ; and as regards pharmacological action, dionin is undoubtedly more closely allied to this substance than heroin. A sedative resembling morphine, but without the depressing action of this substance on the respiratory centre, or its narcotic effects on the higher parts of the brain, is necessary. Heroin, dionin, and codeine are the rivals, and between the first two—both of which, according to their respective supporters, are better than codeine—it is difficult at present to decide. The author's belief is that dionin is more valuable than codeine, and is more sedative than heroin ; but its influence on the respiration is less marked than this.

Heroin slows and increases the depth of the respiration, but this effect is only obtained with doses lying within comparatively narrow limits. To compare the efficient and the toxic dose of this substance is not the point ; what must be compared are the smallest efficient dose, and the smallest dose inducing depression of the respiratory centre ; and the distance between these is not great. This does not mean that such a drug is useless ; it only means that the dose must be carefully regulated. The large toxic dose is an advantage, and gives confidence : but its greater amount compared with dionin, is somewhat misleading when applied to practice. The two drugs are necessarily rivals ; each has its merits, which can only be determined by further clinical observation. (*See* "Dionin").

REFERENCES.—[1] *Therap. Gaz., Aug.* 15, 1900 ; [2] *Nouveaux Remedes*, No. 13, p. 294 ; [3] *Jour. de Phys. et de Path.* Jan., 1899, p. 964 ; [4] *Echo Méd. de Lyon*, July 17, 1900 ; [5] *Med. Chron.*, May, 1901.

HETOL.

This is a synthetically prepared cinnamate of sodium. It has been recommended as a remedy for **Tuberculosis.** Kuhn[1] speaks well of it in doses, beginning with 1 mg. and reaching 25 mg. as the maximum. The majority of cases were under treatment for six weeks.

Guttman[2] reviews the literature of the subject, and affirms that the drug produces a definite general leucocytosis, and by means of the wall of leucocytes cuts off the tuberculous deposit. That hetol is a chemotatic compound producing an increase of leucocytes, has been proved on animals and human beings. In the rabbit the number of leucocytes rose from 8,000 to 31,440 in four hours ; while in a human subject it was observed to rise to 20,000. The spleen is responsible to a great extent for this, for after the removal of that organ, hetol, even in very large doses, only occasions a slight increase. In tuberculous subjects the effect can be divided into four stages : (1,) A pronounced leucocytosis of the whole lung. (2,) The surrounding or walling-in of the deposit by leucocytes. (3,) The formation of connective tissue in the leucocyte wall, and the cutting off of the deposit. (4,) The scarring of the whole area.

These changes are identical with those which have been observed in spontaneous cure, but they take place more rapidly. The author suggests that although hetol is not a specific in tuberculosis, the enormous increase of leucocytes in the diseased area would free an alexin which would anchor itself to the toxins of tubercle bacilli and render them more or less inert ; and that the leucocytes themselves would act as "phagocytes" to the bacilli *in situ*. It is affirmed that there is an improvement even after the first injection, that the

cough and expectoration are lessened, and that the night-sweats cease.

Ewald[3] says the technique is simple and devoid of danger, if thorough asepsis of the skin and syringe is secured. After causing a vein to become prominent by a bandage round the arm, the point of the needle is introduced through its walls, and the required amount is injected into the circulation. One mg. ($\frac{1}{65}$ gr.) of solution of hetol is the initial dose. The injections are given every other day, and the dose is gradually increased up to 15 mg. (about $\frac{1}{4}$ gr.), which should not be exceeded.

Eleven of Ewald's cases were under treatment for eighty or more days. Amongst these one was treated for 316 days, another for 221 days, and several for 150 days or more. The other fourteen cases were treated for thirty to eighty days. Only three cases showed an improvement more marked than any usually seen in the clinic with ordinary hygienic treatment. Disadvantages of the treatment observed are a tendency to hæmoptysis, and in many patients great weariness, and somnolence. The bacilli showed no degenerative changes, and the temperature and night-sweats are uninfluenced.

Krompecher[4] inoculated animals with cultures of varying virulence, and, after an interval, injected hetol into the veins. He also investigated the question of preventive action, by beginning treatment with the drug some days before the inoculation with tubercle, untreated animals being inoculated at the same time for purposes of comparison. The drug was found to cause a temporary leucocytosis three to four hours after administration, with hyperæmia of the bone marrow. The stroma of the lungs was appreciably increased by a succession of injections, owing to mechanical irritation. Preventive treatment was found to give no immunity, and suitable animals inoculated with virulent bacilli died from tuberculosis, in spite of the treatment, as rapidly as the animals used for comparison.

REFERENCES.—[1]*Münch. Med. Woch.*, March 19, 1901; *Brit. Med. Jour.*, May 25, 1901; [2]*Berlin klin. Woch.*, July 8, 1901; *Brit. Med. Jour.*, August 17, 1901; [3]*Berlin klin. Woch.*, May 21, 1901; [4]*Ann. de l'Inst. Pasteur*, Nov. 25, 1900.

IODIPIN AND BROMIPIN.

Walker Hall[1] gives a useful abstract of the literature of these new preparations. Iodipin is a combination of iodine, triglycerides, and sesame oil. In 10 per cent. solution it is an oily liquid, sp. gr. 1·025, insoluble in water and alcohol, but soluble in chloroform, ether, and benzol. One drachm of this 10 per cent. solution

contains 6 grains of iodine, corresponding to 8 grains of potassium iodide. The daily dose is 1 to 6 drachms. It is used with benefit in **Asthma, Bronchitis, Emphysema, Pleurisy,** glandular **Inflammation,** and tertiary **Syphilis.** In twenty-five per cent. solution it is a red violet oil, of honey-like consistence in cold weather, and is employed subcutaneously. The lumbar and gluteal regions are usually selected.

Klingmüller[2] and Sessons[3] find that it is well absorbed, slowly eliminated, does not produce iodism, and rapidly affects the tissues. Winternitz[4] states that it is stored as iodised fat in the omentum, subcutaneous tissue, liver, muscles, and bone marrow. When this fat is metabolised, the iodine is set free to combine with the alkalies of the blood. Zirkelbach found iodine in the urine twenty minutes after ingestion *per os*, but when given subcutaneously, Blomquist did not obtain any reaction until after fifty-two hours. Elimination continues for eight to twenty-nine days after the last dose, whereas with potassium iodide the urine is free from iodine in four days. For the detection of traces of iodine, which will not react with starch-ammonium-persulphate paper, the following method is useful :— To 25 cc. of urine, a few drops of NaOH, and 30 grains of Na_2CO_3 are added, the whole evaporated to dryness, and dissolved in 5 cc. of water. After filtering and acidifying with HCl, the filtrate is heated to expel CO_2 and any cyanides which may have formed, when on the addition of a few drops of nitrous acid or sodium nitrite, the iodine is liberated, and its presence shown by starch solution. The colour reaction is intensified if the starch solution is added before the nitrate.

Bromipin is a compound of bromine with sesame oil. One drachm of the ten per cent. solution contains 6 grains of bromine, corresponding to 8 grains of potassium bromide. In doses of 2 to 4 drachms it has been found useful in **Epilepsy**, and **Neurasthenia.** Wulff[5] recommends it in 1 to 3 drachm doses for **Sea-sickness**, and Laudenheimer employs it for nutritional purposes, giving ½ to 1 ounce per day.

REFERENCES.—[1]*Med. Chron.*, April, 1901 ; [2]*Berlin klin. Woch.*, 1899, Nov. 25 ; [3]*Inaug. Diss., Darmstadt*, 1900 ; [4]*Zeits. f. Physiol. Chem.*, vol. xxiv., 1898 ; [5]*Aertzl. Monat.*, No. 11, 1899.

IRON.

Francis J. H. Coutts[2] in reviewing the pharmacology of iron, shows that the iron that is taken in the food is deposited in all internal organs, but the principal quantity exists in the form of hæmoglobin in the blood. A man weighing 70 kilos., or 140 pounds,

according to Bunge, contains 3·1 to 3·3 gm. of iron, about 46·5 to 49·5 grains. Of this, 2·4 to 2·7 g.m., about 36·0 to 40·5 grains, are contained in the blood. A human being excretes 0·5 to 1·5 mg. of iron in the urine daily (Hamburger). A more abundant excretion of iron occurs in the intestine, whether the iron-compounds have been taken in the food or injected subcutaneously. This will occur, even if the organism takes in no food of any kind, either through the normal digestive canal, or subcutaneously. It will even occur in a condition of starvation. The exact minimum amount of iron upon which an adult or a child may exist has not been accurately determined. A nursing infant takes in daily 0·0033 gm. of iron.

JOHIMBIN. (See "Yohimbin.")

LACNANTHES.

There has been a considerable amount of correspondence in the daily press respecting the reputed powers of this drug, and it is claimed for it that it is a specific for **Phthisis.** There is absolutely no scientific evidence that it is useful in this, or in any other disease of tuberculous origin. A comprehensive account of its origin and supposed properties will be found in King's *American Dispensatory*, 18th edition, 3rd revision (1900), vol. ii, p. 1112.

Murrell[1] points out that the botanical name of the plant is *Lachnanthes tinctoria*, and that it belongs to the N.O. Hæmoderacæ. Its popular names are "red root" and "spirit wood." It is a native of the United States, and grows abundantly in sandy swamps and on the borders of ponds near the Atlantic coast, from Rhode Island to Florida. It flowers in July, and the root is used as a dye. A saturated solution of the whole plant is prepared. In large doses it dilates the pupils, impairs vision, produces dizziness and "other unpleasant symptoms." As is usual with this particular class of remedy, it is reputed to be an unfailing specific for pneumonia, nervous and typhus fevers, diseases of the brain and spinal cord, delirium tremens, wry-neck, laryngeal cough, tinnitus aurium, and nervous headache. The dose is 2 minims every three or four hours, well diluted with water. Its pharmacological action has not been investigated, and no active principle has been obtained from it. It has been lauded as a specific for consumption, but there is no authentic case—by which is meant a case published with some approach to accuracy of detail—in which it has proved beneficial. The author says there is no more reason for employing it in phthisis and other diseases of tuberculous origin, than there is for prescribing the thousand and one other drugs which are described in every

herbal and dispensatory with equal accuracy and minuteness. He asserts that far better results can be obtained in a case of phthisis from a single week's inhalation of some efficient antiseptic, such as formaldehyde, than from the administration of gallons of such an inert preparation as tincture of Lachnanthes.

REFERENCES.—[1]*Times*, Sept. 14, 1901 ; [2]*Brit. Med. Jour.*, Sept. 14, 1901 ; [3]*Med. Press and Circ.*, Sept. 18, 1901.

LIGHT TREATMENT.

In the *Medical Annual*, 1901, p. 83, an account was given of Finsen's Light Treatment.

Mr. Malcolm Morris[1] and Mr. Ernest Dore think that the treatment of **Lupus Vulgaris**, and other diseases of the skin, by means of concentrated light rays, has now become established as a method which may fairly claim to rank as second to none in importance and utility. Although they cannot as yet make any definite statement as to permanent cure, the results they have obtained have fully justified their expectations, and, backed by the larger experience in Copenhagen, they confidently hope that light used in this way will give sufferers from lupus and other intractable diseases of the skin not only better results, but more permanent benefit than any forms of treatment hitherto employed.

It would appear, however, that this view of the subject is not universally accepted, and that considerable doubt exists as to the permanency of the results. A recent writer[2] says :—"The success of the method in curing lupus is undeniable, but there is no scientific evidence either that the cure is permanent, or that the results of that particular plan are better than those yielded by ordinary surgical treatment. On the other hand, the cost of the apparatus and of its administration are relatively enormous, to say nothing of the tedious nature of the process. On the whole it may pretty safely be prophesied that in a few years' time the Finsen method of the treatment of lupus will be a curiosity of medicine, just as many a therapeutic fashion has come and gone." Equally good results can be obtained by the action of the X-rays, or rather of the focus tube from which the X-rays are emitted. There can be no doubt that the focus tube exercises a healing action upon lupus, certain forms of ulcer, and other affections of the skin. Here again, however, we are faced by the general consideration that similar beneficial results can be obtained equally well from ordinary treatment.

Sequira publishes a communication on the treatment of **Rodent Ulcer** by X-rays, founded on twelve cases. The results seem to have been satisfactory, but eight are still under treatment, and four

still under observation. Valdemar Bie[4] reports sixteen cases of epithelioma of the skin treated by Finsen's method. (See "Tuberculosis.")

REFERENCES.—[1]*Brit. Med. Jour.*, Feb. 9, 1901 ; [2]*Med. Press*, July 24, 1901, p. 90 ; [3]*Brit. Med. Jour.*, Feb. 9, 1901 ; [4]*Dermat. Zeits.*, Aug. 6, 1900.

MAMMARY ABSTRACT. (See "Ovarian Extract.")

MERCUROL.

This is a brownish-white powder, soluble in water, but insoluble in alcohol. It is a compound of mercury with nucleinic acid, and contains about 10 per cent. of mercury, so that a 5 per cent. solution of mercurol contains ½ per cent. of mercury ; this in a form which is non-corrosive and non-irritant. It is an organic compound which does not precipitate albumin.

R. Lake[1] has used it as an antiseptic in diseases of the **Nose and Ear.** As a means of treating acute suppurative otitis media (after perforation has occurred), he recommends the injection into the cavity of the middle ear, by means of the Eustachian canal, of a small quantity of a 5 per cent. solution of mercurol. By such treatment a more rapid and effective cure is gained than by any other. That one does obtain extremely good results from mercurol in chronic suppurative otitis media cannot be denied, but the author does not consider this drug to be to any extent superior to perchloride of mercury or carbolic acid.

REFERENCE.—[1]*Lancet*, Dec. 15, 1900.

MERCURY INJECTIONS.

Fournier[1] advocates the employment of calomel injections in the treatment of **Syphilis,** not as a routine treatment, but as an exceptionally powerful one to be used in certain severe conditions, such as spinal and cerebral syphilis, iritis, phagædena, chronic palmar and plantar syphilides, ulcerating tuberculous syphilides, glossitis, and tertiary laryngeal and pulmonary syphilis. It should be regarded as a temporary measure to be used for one or two months till the severe condition is improved, when it should be replaced by more ordinary treatment.

The technique is as follows :—The calomel should be sublimed and not precipitated. It is afterwards washed with boiling alcohol, and then dried. The best vehicle is sterilised olive oil. A Pravaz syringe is used holding a gramme, which contains 5 centigrammes of calomel. The needle is introduced deeply into the gluteal muscles, and a slight interval allowed to elapse before the injection is made, to see if any blood appears. If this occurs the injection should not

be made, since there is danger of pulmonary embolism. The average dose is 5 centigrammes injected every seven or ten days. This may be increased to 7, 8, or 10, if necessary. In women, 3 or 4 centigrammes are enough. Four or six injections are usually sufficient.

The author remarks on the rapid action and beneficial results in many cases, and quotes several severe cases which were cured by a few injections, sometimes only one. On the other hand such good results do not always follow, and sometimes the method fails.

The objections to the method are the occurrence of stomatitis, gastroenteritis, toxic effects, local reaction, and pain. With doses of 5 centigrammes, bad mercurial symptoms are rarely seen ; swelling and induration of the buttocks are frequent, but abscess is rare. Pain is the chief complication, and occurs in three out of five injections. It is sometimes very severe, but the method should not be abandoned on that account in the intractable cases in which he recommends it.

Hillier[2] prefers hypodermic injections of perchloride of mercury, His formula is hydrarg. perchlor. and sodii chloridi, of each 1·2 grammes in 189 c.cm. Two c.cm. are injected daily for two weeks, with a day's interval after six injections. In the third week, two days' rest are given ; in the fourth week, injections are made on alternate days, and after this twice a week. As a rule thirty injections are enough, but sometimes forty or fifty are required. The injections are made into the gluteal muscles. The pain is inconsiderable. The author pays special attention to disinfection of the skin before each injection, and uses successively the razor, soap and water, perchloride of mercury lotion, and alcohol.

The following formula has been suggested for a painless mercurial injection, but no authority for its use is given :—

℞ Ol. olivæ sterlizat 100·00 | Hydrargyri biniodidi 0·50
Guaiacol (synthetic) pur 2·00 |

Inject slowly 2 gm. into the buttock daily or every second day;

REFERENCES.—[1]*Rev. de Therap.*, Nov. 1, 1900 ; *Brit. Med. Jour.*, Dec. 22, 1900 ; [2]*Wien. klin. Rund.*, No. 5, Feb. 3, 1901 ; *Brit. Med. Jour.*, Feb. 23, 1901.

NITRO-GLYCERIN.

Pellegrini[1] tested the effect of this drug in fifteen cases of **Epilepsy**. He counted the number and noted the character of the fits during a three months' bromide treatment, then again during three months without any treatment, and finally for three months during which nitroglycerine was administered.

A 1 per. cent. alcoholic solution was used, and of this 2 to 10 m. were given morning and evening in 250 grammes of water.

Except in one case the nitro-glycerin always diminished the number and severity of the attacks, and in ten out of the fifteen gave better results than bromide. For example, in one case there were twelve attacks under bromide, eighteen under expectant treatment, and only two under nitroglycerin ; on the other hand, one case had three under bromide, twenty-one under no treatment, and fifteen under nitroglycerin. No unpleasant results were observed.

REFERENCES.——[1]*Rip. Med.*, April 8, 1901 ; *Brit. Med. Jour.*, June 29, 1901.

ORCHITIC EXTRACT.

In the *Medical Annual*, 1901, p. 54, under the head of " Spermine," an abstract was given, with recent references to the literature of the subject, of a paper by Dr. Walter E. Dixon. The author has recently published a paper " On the Composition and Action of Orchitic Extract," in which he deals exhaustively with the historical aspect of the question.

The modern theory of internal secretion, and the scientific use of animal extracts in the treatment of disease, dates only from 1889. Organo-therapeusis is, however, no new doctrine, and evidence exists showing that this form of treatment has been in use for many centuries.

Composition of Orchitic Extract.—Extract of testis made with distilled water is alkaline ; it contains a large percentage of proteid, which is almost entirely nucleo-proteid. This may be precipitated by acetic acid, and if the precipitate is filtered and dissolved in a solution of Na_2CO_3, its action can be separately determined. Frequent precipitation and solution, however, alter its chemical composition and render it inactive, whilst even a single precipitation and solution profoundly modify its action. After precipitation with acetic acid only a trace of proteid remains. Orchitic extract also contains a large number of extractives, among which is spermine ; but others in equal quantity, and probably at least as important, are present. Other substances which can be readily detected are lecithin and cholesterin. Inorganic salts are found in the ash in considerable quantity—about 7·5 per cent. of dried ram's testis ; they consist of chlorides, sulphates, and phosphates of sodium and potassium ; a little calcium is also present.

As to which of these several constituents compose the active principle, more than one substance has been suggested. Luton found injections of sodium phosphate and sulphate as efficacious as Brown-Séquard's fluid ; and Poehl claims the honour for his spermine. Brown-Séquard denied that either was the active substance. Another

body which may be suggested is the nucleo-proteid. It is necessary to discriminate as far as is possible between the action of these substances.

The Extractives of Testis.—Probably a considerable number of bodies of this class are present in the testis; most are soluble in alcohol, but spermine is insoluble. The chief interest of spermine depends on the fact that it is constantly present in all tissues of the body, and in some pathological conditions (leucocythæmia and nervous diseases) is increased. It is, however, present in greatest amount in the testis and in nerve tissue. Spermine has the formula $C_5H_{14}N_2$, and is an organic base, but is usually only detected in the animal body, as the phosphate. This salt was first described by Charcot in the blood of leucocythæmics, and by Leyden in the sputum of the asthmatic; it is normally present in appreciable quantities in semen.

Poehl has endeavoured to prove that injections of spermine produce identical effects to those described by Brown-Séquard. His idea appears to be that nucleo-proteid in the body splits up into spermine and "xanthine-like" bodies, and that the latter are oxidised through the instrumentality of the former into urea, etc. But this theory cannot be said to be justified by the facts.

Spermine is one of a group of substances (leucomanes) which all have a very similar action when injected into the circulation. It differs from many of these substances, however, in that it is insoluble in alcohol. Yet alcoholic extracts of the testis, watery extracts which have been boiled and filtered, and spermine, produce identical results when injected into animals. All these bodies when injected into the circulation, produce a fall of blood pressure, with slight cardiac slowing, followed by a rapid recovery. This effect is largely cardiac, due to stimulation of the peripheral ends of the vagus in the heart, and if these have been previously paralysed by an injection of atropine, the fall of pressure is not produced.

Another and very important effect of these substances is the vasodilatation to which they give rise. This is especially well seen in the splanchnic vessels, but the limb and other vessels also show the effect. The action is also produced when administration is by the stomach, and in this case an increase in the "volume pulse" is usually recorded in about ten minutes. All this group of bodies stimulate involuntary muscles, and slightly increase peristalsis.

The effect of spermine on metabolism has been studied by Poehl. He states that when this base is administered to patients the excretion of urea is increased, but the uric acid, creatine, and leucomanes

generally are diminished; also the relationship of the urea to the chlorides become less, in spite of the increase of the former. Experiments of this nature have not been performed with other extractives of the testis.

Nucleo-proteid of the Testis.—If the testis has an internal secretion which produces a specific action on the organism, it seems probable that the nucleo-proteid, which forms such a large percentage of the active gland cells, would be concerned directly or indirectly with this effect. The action of nucleo-proteid on the animal body varies according to the method of its administration. When nucleins are taken by the mouth, only a small quantity is absorbed by the stomach, but on reaching the duodenum they are split up by the pancreatic juice, and an organic acid containing phosphorus is liberated. This probably combines again with another proteid, and the phosphorus is in this condition absorbed directly into the blood. As a direct result of this absorption a considerable increase in the leucocytes of the peripheral circulation is produced, and this is associated with an increased excretion of P_2O_5 in the urine, the output of phosphorus being in excess of that contained in the nucleo-proteid administered. The increased excretion of phosphorus is accompanied by a proportional increase in the alloxuric bodies.

When the nucleo-proteid is injected subcutaneously, it is not, of course, altered by the digestive processes, and is absorbed much more rapidly. Injections of Brown-Séquard's fluid produce a diminution of phosphorus excretion in the urine, and subcutaneous injection of orthitic extract produces a prolonged hypoleucocytosis in rabbits. This effect is the direct result of the nucleo-proteid, and cannot be referred to the extractives of testis or to spermine. The marked diminution in the number of the leucocytes is mainly at the expense of the polynuclear variety, the lymphocytes being least affected. The diminution is largely due to altered distribution, and an excess of the normal number is found in the capillaries of the lung, liver, and other organs.

The difference in the action of nucleo-proteid when administered by the mouth and when injected subcutaneously, is worthy of note. By the mouth an immediate hyperleucocytosis is produced, whilst the excretion of P_2O_5 in the urine is increased; when injected, however, there is a prolonged hypoleucocytosis, and the phosphorus excretion is said to be diminished.

When injected directly into the circulation, nucleo-proteid has an effect on both the heart and peripheral vessels; the former action may be eliminated by paralysing the vagi with atropine, but the

latter effect is uninfluenced by this drug. The heart is slowed, and the auricular and ventricular systole gradually become more and more feeble, and, mainly as a result of this effect, the blood pressure falls. Associated with this condition is a vaso-motor change, and the peripheral vessels dilate ; occasionally there is an initial short constriction, but dilatation is in all cases the ultimate and prolonged effect. This dilatation affects the testis with the other organs.

Extracts of epididymis and vesiculæ seminales act similarly to extracts of testis, but the effect on the heart is less, whilst the vaso-dilatation is greater. This greater dilatation is partially due to the increased amount of the extractives (especially spermin), which are present in the epididymis ; nevertheless the effect is too great to be entirely accounted for by any such increase, and an active constituent of a proteid nature, but which is not destroyed by boiling, takes a prominent part in the production of the effect. There is reason to believe that these vaso-dilator bodies can be absorbed from mucous surfaces, and thus produce their effect on the abdominal viscera.

Clinical experiments with orchitic extract of such a nature as to be of any use in evidence are few. Pregl perfected modified ergographic experiments by means of dumb-bell exercises ; he found that the injection of orchitic extract led to an increased efficiency, and he claimed that the power of muscle for performing work was distinctly increased. Similar results have been obtained by Zoth. Hénocque found that Brown-Séquard's injections produced in **Phthisis** a permanent increase in the amount of hæmoglobin, and therefore concluded that they had a beneficial effect on the blood.

Dr. Thelberg, of New York City, records two cases of sexual **Impotency,** treated successfully by hypodermic injections of Poehl's 2 per cent. sterilised solution of hydrochloride of spermine. The dose employed was 1 c.c., administered daily for a week.

Dr. Thomas J. Mays,[3] of Philadelphia, injected from 5 to 10 minims of Krieger's spermine into the arms of four **phthsical** patients, on whom observations were made on temperature, pulse, and respiration, before and after each injection. It appeared that the injections diminished the temperature somewhat, and reduced the pulse and respiration rate in these four cases—the influence on the pulse being most marked. In two of the patients, the injections were followed by a feeling of warmth and well-being over the whole body, which in the course of half an hour, or an hour, gave way to quietude, and a disposition to sleep. There was no gain in flesh, and it does not seem that spermine injections are of any permanent value in the treatment of phthisis.

REFERENCES.—[1]*Pract.*, May, 1901 ; *Jour. Physiol.*, vol. xxvi., No. 3, 4 ; *Brit. Med. Jour.*, March 23, 1901 ; [2]*Inter. Med. Mag.*, Nov., 1900 ; [3]*Ibid.*

OVARIAN EXTRACT.

Dr. Wilmer Krüsen, of Philadelphia, has devoted three years to the study of the therapeutical properties of this substance in three classes of cases :—(1,) Those suffering from **Amenorrhœa, Dysmenorrhœa**, and other forms of pelvic disease. (2,) Those suffering from symptoms following the removal of the uterine appendages, for the relief of the vaso-motor changes, the flushes and **Cardiac Neuroses**, which with indescribable depression, are so often produced by the premature menopause. (3,) The disturbances associated with the natural **Menopause**.

The conclusions arrived at are :—

(1,) The employment of ovarian extract is practically harmless, no untoward effects beyond slight nausea having been noted.

(2,) In the treatment of amenorrhœa and dysmenorrhœa, no good results were secured.

(3,) The best results were seen in the second class of cases, for the relief of symptoms of artificial menopause, where in a few instances the congestive and nervous symptoms were apparently ameliorated.

(4,) No appreciable result was noticed from the use of ovarine in the natural menopause.

(5,) No definite reliance can be placed upon the drug, as it often proves valueless where most positively indicated.

(6,) It is extremely problematic whether, in those cases in which relief was noted, the effect was not due to mental suggestion rather than to any direct physiological action of the drug.

(7,) In those instances in which effects were noted, increase in dosage seemed to have little influence.

(8,) In conclusion, the theory which suggests the use of this extract seems to be at fault. In organotherapy, the best results have been obtained from the use of the thyroid and adrenal glands, and the ovary is in function not at all analogous to these organs. Its principal function is ovulation, and if any peculiar product is coincidently manufactured, the isolation of this product has not yet been accomplished.

Dr. John Phillips[2] speaks cautiously of the use of this drug. He points out that we are dealing with a drug, the dosage and the toxic effects of which are so far quite an unknown quantity.

Dr. Régis[3] prescribed it in a case of **Mania** following removal of both ovaries and tubes ; the result was most successful, although many injections were necessary.

Leopold Landau[4] gives his support to this mode of treatment, and since then many original articles have been written recommending its adoption in numerous varieties of female disease.

The methods of administration of ovarian extract are three :—(1,) That followed by Knauer[5], who grafted the fresh gland into the peritoneum or under the skin ; (2,) Brown-Séquard's method by subcutaneous injections of the organic extracts ; and (3,) The method recommended by Horwitz and others, and now in general use—*viz.*, administering the extract by the mouth or the rectum, either in a natural state, in the form of "ovarine" tablets, or as a glycerin extract. So far no satisfactory evidence has been brought forward as to the effects of ovarian extract. Five grain tablets have been given as a rule thrice daily, and Phillips prescribed as many as three tablets thrice daily, without any toxic effects or any amelioration of the symptoms arising. Jayle has observed zona, and Schuster general urticaria after prolonged ingestion of ovarian extract. Phillips has given ovarian extract in many diseases (often experimentally), but in none has he obtained any definitely satisfactory results, with the exceptions of the natural and the artificially induced menopause. In eight cases of menopause the distressing headaches and flushes were certainly relieved, but this may have been the result of suggestion. Julien,[6] on the contrary, finds the drug of great value in post-operative menopausal symptoms, in amenorrhœa, dysmenorrhœa, anæmia, chlorosis, and osteomalacia. He gives full notes of forty-one cases in support of his assertions.

The administration of mammary abstract is surrounded by still greater uncertainty. It is best given in the raw state, cow's udder being cut into thin slices and made into a salad. This method has been frequently prescribed and carried out by Freudenberg.[7] No effects, beyond a suspicion of improvement in lactation during its ingestion, have been recorded.

REFERENCES.—[1]*Inter. Med. Mag.*, Nov., 1900 ; [2]*Lancet*, May 18, 1901 ; [3]*Gaz. Méd. de Paris*, 1893, No. 41, p. 481 ; [4]*Ver. der Berl. Med. Gessell.*, 1895-6, Band xxvii, s. 182 ; [5]*Einige Versuche über Ovarien. bei Kaninchen, Cent. f. Gyn.*, 1896, No. 20, s. 524 ; [6]*Sur la Valeur de l'Opoth. Ovar.* Thesis, Lille, 1899 ; [7]*Der Frauenarzt*, Aug. 17, 1901, s. 353.

OX-SERUM.

Dr. F. F. Grunbaum[1] speaks highly of the value of this substance in **Rectal Feeding.** He points out that it is customary to give nutrient enemata, consisting of milk and beef extracts, along with an occasional so-called nutrient suppository, in cases where feeding by the

mouth is contra-indicated. In cases of hæmatemesis, due to gastric ulcer, or to a condition allied to epistaxis in young, well-nourished girls, the result is most satisfactory, although there is little doubt that they would recover if they received water only by the rectum. There are, however, conditions where it is essential that the rectal diet should more nearly accord with the requirements of the metabolism of the body.

An average woman, doing a moderate amount of work, requires food which has a heat value of 2,400 calories, while one at rest requires a diet with a heat value a little less than 2,000 calories. This would be represented by 85 grams of proteid, 40 grams of fat, and 320 grams of carbohydrate. The author's reason for selecting ox-serum was that it contains a constant amount of proteid, which is easily absorbed by the mucous membrane of the large intestine. It is inexpensive, does not require any tedious preparation, but simply the addition of a preservative. He adds 2 grains of chloretone to each ounce of serum, as that drug not only acts as an antiseptic, but also as a sedative. Serum does not give rise to offensive stools, which is often the case when egg albumen is used. By injecting 90 c.c. every four hours, 540 c.c. of serum is introduced in the twenty-four hours, which contain 38 grams of pure proteid. By adding 60 c.c. of milk to each enema the total proteid in the diet would be raised to 51 grams. Patients on rectal feeding received a water enema every morning to wash out the rectum, the analyses of these, which varied in amount from 300 to 500 c.c., showed that they contained from 0·05 to 0·1 per cent. of proteid, and albumoses in so small quantities that it was often impossible to detect their presence. It was thus proved that less than a gramme of proteid was excreted unaltered. Fat is not easily absorbed by the mucous membrane of the large intestine, and of the 18 grammes in the milk, invariably some has been returned in the wash-out enemata, but the quantity has usually been extremely small.

The heat value of the above diet is 578 calories. This may be increased by another 300 calories by the subcutaneous injection of sterilised olive oil; 30 or 40 c.c. may be given daily. By this method half the necessary energy can be supplied, and the loss in weight can be reduced to 750 grammes a week.

REFERENCE.—[1]*Brit. Med. Jour.*, April 6, 1901.

PILOCARPINE.

Scheffer[1] has treated a number of cases of **Alopecia** by hypodermic injections of nitrate of pilocarpine. Pilocarpine was chosen from its property of sweat inducing, the sweat glands being analogous

to the hair follicles, both embryologically and structurally. In many diseases in which the skin takes up extended excretory functions, there is an increased production of soft new hair in certain regions. Additionally, pilocarpine produces a local vaso-dilatation.

The alopecial patch is well cleansed with 90 per cent. alcohol, and a syringe holding about 12 minims is filled with the two medicaments. The upper third is filled with $HgCl_2$ solution 1 in 1,000, the second with 1 in 200 pilocarpine nitrate, and the lower third with 1 in 1,000 $HgCl_2$. The needle is introduced parallel with the scalp and just underneath the epidermis; it is then emptied, and leaves a small lentil-sized swelling. This is repeated around the periphery of the patch, and in a circle within it, the punctures being about 1 cm. apart. An alopecial patch the size of a 5-franc piece requires about twelve punctures. The application should be repeated every other day for six or seven days.

The immediate effects produced are an anæmic zone followed by a marked vascularity lasting for several hours. Five or ten minutes after the injection, drops of sweat appear on the vascular zone, and this continues for an hour. The secondary results (tabulated from some sixty cases, extending over three years) are immediate arrest of the alopecia extension, and a gradual regrowth of hair—first light and then darker—from periphery to centre. This growth should be evident after four applications, but in all cases the treatment should be persistent. Its extent is indicated by the size of the bare patch, the age of the lesion, the position—temporal and occipital alopecia is always the more difficult to obtain good results—and the age of the subject. The treatment yielded successful results.

REFERENCES.—[1] *Med. Mod.*, May 19, 1900; *Brit. Med. Jour.*, Dec. 8, 1900.

QUININE.

Dr. Wm. Sykes,[1] of Torquay, has made some observations with enteric fever patients, on the mode and rapidity of reduction of temperature by this drug. The experiments were carried out with an old-fashioned sensitive clinical thermometer, without index, placed in the axilla. In the first series of experiments the dose administered was ½ a drachm of the sulphate, and the observations extended over two hours eighteen and a half minutes, during which time the temperature fell 1·6° F. Deducting the first seventeen minutes during which the temperature remained unaltered, the average rate of fall was 0·1° during every 7·59 minutes. The rate of fall, however, was not regular, but varied greatly, sometimes requiring as long as ten minutes (once twelve minutes) to accomplish

a drop of 1°, sometimes performing it in one and a half minutes, and once remaining quite stationary for fifteen minutes. The fall of temperature was accompanied by profuse diaphoresis. At the conclusion of the observations the temperature was 102°; the respirations were 26, and the pulse 92, and markedly dicrotic. The temperature, as stated, having thus fallen 1·6°, the respirations quickened 2 in each minute, and the pulse slowed 8 beats per minute.

The author finds that the size of the dose within certain limits does not affect the rapidity of the defervescence. He points out that there are four methods in which the antipyretic effects of the quinine might be thought to act: (*a*,) By a destruction of pathogenic bacteria; (*b*,) By a neutralisation of their resulting toxins; (*c*,) By an interference with the heat-regulating centres; and (*d*,) By producing diaphoresis. The destruction of pathogenic bacteria is negatived by the merely temporary nature of the defervescence which follows the administration of quinine; moreover, we have no experimental proofs that a diluted solution of quinine of the strength of 20 or 30 grains dissolved in fluid equal in volume to the whole of the blood of an individual, would exercise a lethal effect on Eberth's bacillus. It is improbable that quinine in whatever strength would neutralise the chemical products of the typhoid bacillus, since they appear to bear no chemical relation to each other. There remain, therefore, only two probable methods of action—on the heat centres and on the sweat centres. It is improbable, if the heat-centre theory be true, that the proportional rate of decrease of temperature should be so irregular, and that its speed should not be affected by the amount of dosage. If, however, we accept the diaphoretic theory of defervescence produced by antipyretic remedies, it would explain many of the difficulties of the question. Since defervescence by diaphoresis depends upon the sweating itself and not upon its causation; the dose, so long as it was sufficient to produce perspiration at all, would have no effect on the speed of the resulting defervescence; since slight movements in bed by which the surface became chilled would temporarily stop the diaphoresis, the stationary and even regressive intervals would be explicable on such grounds. Most, if not all, of the antipyretic group, when administered for reduction of temperature in efficient doses, produce violent diaphoresis, which also occurs in the night-sweats produced by the toxins of the tubercle bacilli, and these are in like manner succeeded by a normal or subnormal temperature.

REFERENCE.—[1] *Brit. Med. Jour.*, Nov. 3, 1900.

RAW MEAT.

Prof. Richet,[1] of Paris, finds that the ingestion of raw meat or of its plasma constitutes one of the most powerful remedies known for **Phthisis.** It should be given at the outset, and in sufficiently large quantities, from one pound to a pound and a half each day of the raw meat, but if the pressed juice is used, from two to three pounds of the meat are required to furnish a sufficient quantity of the plasma.

This mode of treatment is not new, and raw meat in various forms of tuberculous disease has long been employed.

REFERENCE.—[1] *Med. Press and Circ.*, Dec. 5, 1900.

SALICYLATES.

Comparatively little has been written about salicylic acid and the salicylates of late years, but recently Dr. Charteris,[1] of Glasgow, has published an able article giving an account of the pharmacological action of this group of remedies, dealing especially with their use in the treatment of **Acute Rheumatism** and other allied conditions. At first the drug was given in the form of the acid. Large doses of the acid are irritating, and cause a burning sensation in the gullet, and as it was found that the sodium salt had a similar action without the irritating properties of the acid, it soon came to be the chief drug for internal administration.

After a moderate dose of the sodium salt, symptoms resembling those of cinchonism may be noted: throbbing, and a sense of fullness in the head, with ringing or roaring noises in the ears. After a large dose there may be deafness. Probably, as in the case of cinchonism, these symptoms depend on congestion of the tympanic vessels. After a large dose, sweating is almost always noted. The drug is rapidly absorbed, and circulates probably in the form of the sodium salicylate, though some hold that it becomes converted into an albuminate.

It is eliminated rapidly. In the case of a child with an extroverted bladder, the drug was detected in the urine within eight minutes of administration, and, as a rule, can be detected in the urine within thirty minutes of ingestion. The elimination persists over a considerable time, and the drug has been detected as long as eight days after the last dose. It takes place either as salicylic acid or as salicyluric acid. Salicyluric acid is not a compound of uric and salicylic acid, but is formed from glycocol and salicylic acid. Haig thinks that after elimination, salicyluric acid is re-converted into salicylic acid. The presence of the drug in the urine can be detected by the addition of a few drops of a solution of perchloride of iron,

which gives a violet reaction. Sometimes, especially after a large dose, the urine assumes an olive green colour, due to the presence of indican or pyrocatechin.

In susceptible people, and after large doses, symptoms of poisoning have been noted. There may be collapse and vomiting, or involvement of the respiratory system may be evidenced by quickening and deepening of the respiration. In other cases the symptoms are cerebral in origin, and there may be maniacal delirium, as in the case of a patient suffering from acute rheumatism, who, after taking 5 grammes, became acutely delirious, leaping from his bed and assaulting the attendants, although the swelling had not yet left his joints. After the effects had passed off, the patient recovered without any mental impairment. As a rule, cerebral symptoms are not severe. The drug is badly borne by drunkards, and symptoms of intoxication have frequently been observed, such as hallucinations of sight and hearing, and delirium, usually of a cheerful, but sometimes of a melancholy type. These symptoms frequently last for several days.

On the circulation, moderate doses have no depressing effect; indeed, experiments on dogs and rabbits show that they directly stimulate the heart and vaso-motor centres. On the other hand, large doses powerfully depress the circulation. In man, collapse is frequently observed, but is not so common since the drug has been made more pure by raising the melting point, as formerly it was largely contaminated with poisonous creosol products. On the respiration, the effect is similar, slight doses stimulating, and large doses acting as depressants.

The salicylates increase the amount of **Uric Acid** eliminated in the urine. In the urine the elimination products have the power of rotating polarised light to the left; and as the salicylates have recently been recommended by Ebstein in diabetes, it is important to remember that a rotation may be due to the drug, and not denote any sugar, or at most a mere trace.

In health, the salicylates have no effect on the temperature; in febrile conditions they act as effective **Antipyretics**, causing profuse sweating and lowering of temperature.

To the general statement that the salicylates merely temporarily reduced the temperature without modifying the future course of the disease, there was one brilliant exception. The earliest investigators were struck by the wonderful effect it had on cases of acute rheumatic fever. Not only was the fever reduced, but the pain in the joints was relieved more rapidly than any other previous treat-

ment had been able to effect. These favourable reports rapidly accumulated, and in a very short time it was established that the salicylates had a specific action in **Acute Rheumatism**, so rapid that all pain might be gone from the joints and the patient able to move them freely, before the swelling had subsided. Within a year the salicylates had revolutionised the treatment, and completely altered the clinical course, of acute rheumatic fever.

Stricker published the following accurate summary of the action of the drug :—

(1,) Salicylic acid seems to be a genuine and rapid cure in cases of true rheumatism.

(2,) It is not injurious to the human organism in the doses necessary to cure the disease.

(3,) Old people and those in feeble health are more likely to suffer from symptoms of poisoning than the young and robust, the most frequent toxic symptoms being noises or ringing in the ears, difficulty of hearing, and sweating.

(4,) If given in proper quantities, it will prevent the occurrence of fresh attacks in joints hitherto unaffected, and also of the serous membranes.

(5,) To prevent relapses, the drug should be continued for several days in diminished dose.

He also pointed out that the salicyl compounds were of only doubtful utility in chronic rheumatism, and of no value in gonorrhœal rheumatism and polyarthrites of septic origin.

Though we are perfectly familiar with the proper way to use the salicyl compounds, we are still in the dark as to how they act. Our views regarding the nature and etiology of rheumatic fever have completely changed in the last twenty-five years. Cullen's theory that the disease was due to the action of cold, causing local inflammatory changes in the joints, which affected the system secondarily, was replaced by Mitchell's view, who thought the disease was due to changes in the central nervous system. For many years the chemical theories held the field. According to them, there was excessive formation of lactic and uric acid, which gave rise to the local and general symptoms. The modern theory, and the one which is gaining ground, is that which holds that the fever is due to a toxæmia, which is probably due to the presence of a specific germ.

Salicylic acid was found by Bucholz to have the power of arresting the movements of amœbæ. It has been argued that in order to kill any organisms in the tissues, the blood would

require to be so charged with the drug that the heart would be paralysed. It is conceivable that the salicyl compounds may have a specific action on the germ, which may be susceptible to minute traces of the salicyl compounds. Another theory of the action of the salicylates is that they combine with the toxic products, destroying or neutralising them, and enabling the tissues to produce the necessary antitoxins. In this connection it is to be noted that the salicyl compounds stimulate various secretory channels, especially the skin and liver. Haig has shown that the salicylates greatly increase the excretion of uric acid. He thinks that there is a true stimulation of excretion, not due to an increased formation. It has also been urged that the salicyl compounds have no direct action on the cause of the disease, but that they merely have an action on the nervous system; thus salicylate of sodium usually relieves the sensation of pain in the articular lesions of rheumatic fever, but has no aborting action on the further evolution of the disease.

However divided may be the views regarding the mode of action of the salicyl compounds, there is no dispute about the way to exhibit them in rheumatic fever. They are used both locally and internally. The patient is put to bed, kept between blankets, and fed on milk. Any of the salicyl compounds—salicin, salol, or salicylate of sodium—can be used. The strongest seems the sodium salt, then salol, and lastly salicin. 20 grains of the sodium salt may be given, as a powder dissolved in water, every two hours. This relieves the pain, and reduces the temperature within thirty-six to forty-eight hours. The dose may then be reduced to 20 grains every four hours, and after another two or three days a further reduction to 20 grains four times a day may be effected. At the end of the week 10 grains thrice a day are sufficient. It is a good plan to change to the salicylate of quinine, which may be given in 5-grain doses, and acts as a tonic. Should the sodium salt be badly borne, the salicin preparation may be substituted for it. Salicin is a glucoside, and has the advantage of being a bitter tonic; it is not a nervous depressant, and does not disturb digestion.

To obtain the benefit of salicylate treatment, it is necessary to employ full and frequent doses till the temperature falls, and then continue the use of smaller doses. It has been stated that relapses are more common under the salicylates, but that is really a testimony to their efficacy. The patient obtains such immediate relief that he concludes he is cured, and by indulging in injudicious exercise, brings on a recrudescence of his trouble. By the salicylate treatment we are able, as a rule, to confine the disease to the first

set of joints involved, but do not shorten the time during which recrudescences of the disease may occur.

REFERENCE.—[1]*Med. Brief*, April, 1901.

SALOPHEN.

Ghetti[1] recommends injections of this substance in the treatment of **Sciatica.** An aqueous alkaline solution was made, of which each 10 c.cm. contained 1 gramme of salophen. This was injected into the gluteal muscles every other day. After the sixth injection the pain was materially lessened, and had practically gone after the eleventh. The patients were kept in bed until the fifteenth injection. Thirty injections were given in all, after which the patients, feeling quite well, left the hospital. They were seen fourteen months later, and had remained quite free from pain for the whole of the time. Salophen is supposed to split up into salicylic acid (of which it contains 51 per cent.) and acetylparamidophenol when taken into the body.

REFERENCE.—[1]*Gaz. deg. Osped.*, Sept. 23, 1900.

SENECIO.

Murrell[1] finds that when **Amenorrhœa** is associated with anæmia, a preliminary course of iron is necessary before the administration of senecio.

In cases of functional amenorrhœa not associated with anæmia, the drug is reliable. It should be given for some days before the expected period, but not in the interval.

The author recommends senecio given in pill in 2-grain doses three times a day in these cases.

REFERENCES.—[1]*Med. Brief*, May, 1901; [2]*Westm. Hosp. Reports*, 1901.

SETONS.

Setons are rarely used now in medical practice, but Mr. Walter Whitehead[1] speaks enthusiastically of the value of the introduction of an ordinary tape seton through the skin at the back of the neck in the treatment of **Migraine.** Most of the cases were of exceptional severity, and all had been previously under medical treatment without receiving any material benefit. The skin at the back of the neck is grasped between the finger and thumb of the left hand, and behind the fingers a long-bladed scalpel is forced so as to transfix the skin. Before the knife is removed, a long probe provided with a suitable eye is passed through the wound, using the knife as a guide. The scalpel is then withdrawn. A piece of ordinary household tape half an inch wide is then attached by a ligature to the eye of the probe,

and the probe pulled through the wound, bringing the tape with it. Four inches of tape are left free at each side, and these are gently tied together to prevent the tape being accidentally withdrawn. Instructions are given to the patient to move the tape from side to side each day. The interposing skin between the point of entrance of the seton and that of exit naturally varies with the thickness of the skin of the individual patient, and in some cases may only be an inch, whereas in others there may be a distance of 2 inches. The operation, if performed with moderate dexterity, need only occupy half a minute, and nitrous oxide is quite sufficient as an anæsthetic. The seton ought to be worn uninterruptedly for three months at least, in the first instance, and should the symptoms recur, a second seton ought to be introduced.

REFERENCE.—[1]*Brit. Med. Jour.*, Feb. 9, 1901.

SPERMINE. (See "Orchitic Fluid.")

SULPHONAL. (See "Trional."

SUPRA-RENAL EXTRACT.

O. F. F. Grunbaum[1] advises the employment of this substance in **Hæmorrhage** from the walls of the alimentary canal, a condition indicated by the occurrence of hæmatemisis or malæna.

The *rationale* of the treatment is based on Schäfer's observation that supra-renal extract caused contraction of the plain muscle fibres of blood-vessels when applied locally, and acts as an efficient hæmostatic in epistaxis, together with the result of a series of experiments which led to the conclusion that administration of the gland by the mouth does not cause a rise of blood pressure in normal individuals. As many of the liquid extracts are robbed of their efficiency by time, one or two crushed 5-grain tablets given by the mouth is the most satisfactory method of administration in hæmatemisis.

The advantage of supra-renal extract over the more popular hæmostatics lies in the fact that it acts in very dilute solution, and does not tend to combine with albumin and become inert in a similar way to ferric chloride; it must, however, be borne in mind that it does not cause coagulation of the blood, and therefore does not seal the bleeding points with clot. Thus, in hæmatemisis the most rational method of using iron is by administering one large dose, since some of it will combine with the blood already shed into the stomach, and an excess is required to cause coagulation of the blood oozing from the vessels and thus seal them. The correct administration of supra-renal extract offers considerable contrast. Small doses may be given, since the drug acts in very dilute solution; but it must be repeated

at short intervals, since only while the vessel wall is under the action of the extract will it remain contracted; coagulation of blood is not accelerated. Practice substantiates theory, for in cases where supra-renal extract has been administered, temporary cessation of bleeding has occurred, but often recurrence of hæmorrhage has ensued after several hours when no repetition of the dose has been ordered.

Hæmorrhage from a small artery is more likely to be efficiently controlled than capillary oozing from a hyperæmic mucous membrane. It is no easy matter to foretell whether its exhibition in typhoid ulceration and hæmorrhage would be followed by satisfactory results, since it is questionable whether the extract would reach the site of the ulcer in a potent form.

Two or three tablets crushed and mixed with a few ounces of water and injected into the rectum is the most satisfactory method of applying the remedy in hæmorrhage from that viscus. A sterile extract is not irritating, and may be used to wash out the bladder when bleeding occurs from that organ; it may also with advantage be added to the water used as a uterine douche in cases of *post-partum* hæmorrhage.

G. A. Peters[2] reports four cases in which **Pain** was relieved by supra-renal extract. He points out that in spite of the extensive medical literature of the present day, it is noticeable that a very small amount of matter dealing with the relief of the pain of cancer exists. It is agreed that hypodermic injections of morphine are by far the most potent in giving relief to this pain, and though such treatment may be deferred for some time, it is eventually used. This use of morphine signalises the last stage, for the effect of morphine on the nutrition of the body is essentially bad. Undoubtedly morphine must be used in many cases, but local application of supra-renal extract will in many cases postpone the necessity for the narcotic drug.

When liquid supra-renal extract is applied to a part of the respiratory, intestinal, or genito-urinary or other mucous membrane, a pallor spreads over the inflamed surface and usually obtains for two hours; even the pain of suppurative ophthalmia is eased. The pain of subacute inflammations, such as those of cancer and tuberculosis, is quickly and safely eased for two or more hours. Application of the extract once or twice in the twenty-four hours reduces the pain to a minimum, and apparently the inflammatory condition subsides somewhat.

Of the various preparations of suprarenal extract in the market, the liquid preparations have proved unsatisfactory, but an efficient

preparation can at any time be prepared from the tabloids of the dried gland. Two tabloids, representing 10 grains of fresh gland, are powdered and placed in a test-tube with 100 minims of boiled water. The test-tube is stood in boiling water for from ten to fifteen minutes. The contents are then filtered; the opalescent filtrate presents a 10 per cent. watery extract, has a specific gravity of 1·032, and contains about 2 per cent. of sodium chloride. If required, solid cocaine hydrochlorate can be conveniently added to the cooled filtrate. This extract varies widely in keeping properties, and though after the addition of a little camphor it may keep some days, it is better to prepare fresh sterile solutions.

Some of the 10 per cent. watery extract was injected subcutaneously into rabbits with no marked ill-effect, until a proportion was reached when 1 gramme of the 10 per cent. extract of suprarenal gland was injected into 1,000 grammes of rabbit; at this point a diminution of weight and fall of rectal temperature were noted. When the amount of extract was doubled, a great fall of temperature occurred, together with a tendency to sepsis, local gangrene, and death.

W. H. Bates[3] regards the aqueous extract of the suprarenal capsule as the most powerful astringent, hæmostatic, and heart tonic known. It lessens congestion of the eye and of other organs. The extract is not irritating or poisonous, and, unlike other powerful drugs, is never contra-indicated.

Dan McKenzie[4] advocates the use of suprarenal extract in the **Epistaxis** of hæmophilia. He records the case of a boy, the subject of hæmorrhagic diathesis, who suffered from persistent attacks of nose-bleeding which could not be arrested by tannin, calcium chloride, or plugging. Three 5-grain tabloids of suprarenal extract were bruised to powder, mixed with ℥j of water, and allowed to settle. A tampon of cotton-wool soaked in the clear fluid was loosely inserted into the nostril, with immediate success. Violent sneezing accompanied the application of the remedy. A slight recurrence of bleeding some hours after was checked at once in the same way, and there was no further trouble.

Weil[5] also says that in cases of "habitual nose-bleeding" the use of the organic extracts is worth a trial, but he pins his faith to local applications of a 5 per cent. solution of gelatin for the epistaxis of hæmophilia.

REFERENCES.—[1]*Brit. Med. Jour.*, Nov. 3, 1900; *Jour. of Phys.*, 1899; [2]*Lancet*, March 2, 1901; [3]*Med. Rec.*, Nov. 2, 1900; [4]*Brit. Med. Jour.*, April 27, 1901; [5]*Cent. f. die ges. Therap.*, Wien, Dec., 1900; Epitome of Weil's article in *Klin. Therap. Woch.*, No. 15, 1900.

TANNIGEN.

A. Tausig[1] has employed this drug in all forms of **Diarrhœa,** not only in children, but in adults. It does not diminish the appetite, and even when used for a lengthened period is well borne. It is specially useful in the diarrhœa of children, even in those at the breast. In diarrhœa, with an alkaline reaction, tannigen especially proved its usefullness. The best resuts were obtained in sub-acute and chronic diarrhœas of children. After the third or fourth dose, the mucus and water in the stools diminished, and generally after three or four days the stools appeared normal.

In chronic **Intestinal Catarrh** the course was slower, but the effect of the drug was unmistakeable. The author recommends continuance in smaller doses, even after the diarrhœa has subsided. The dose given was, in children under two, 0·25 grammes; above that age, 0·5 grammes, and four or five doses daily. If it could not be given in the ordinary ways, it was given in gruel. The stools were often dark coloured from its use. In acute intestinal catarrh it was not so useful so long as the acute stage lasted. Calomel and the other older and tried remedies were best then, and later, when the stools took on the catarrhal character, tannigen soon brought about an improvement.

Simple dyspepsia and isolated stomach affections do not appear suitable for tannigen treatment.

In diarrhœa from various causes, in connection with a slight chill, measles, excitement in nervously disposed persons, in irritable bowel (nervous weakness) it always acts favourably. In diarrhœa with vomiting it almost always had a good effect. In tuberculosis of the intestines, any good result was only transient.

REFERENCES.—[1] *Deut. Med. Zeit.*, No. 50; *Med. Press*, July 10, 1901.

THYROID GLAND.

H. Oliphant Nicholson,[1] in a paper on **Eclampsia** and the thyroid gland, discusses :—

(1,) The relation of the thyroid gland to eclampsia, as seen in its bearing upon the pre-eclamptic symptoms of :—(*a*,) Œdema; (*b*,) Albuminuria; (*c*,) Diminution of urine; (*d*,) High arterial tension; (*e*,) Headache, diarrhœa, eye conditions, etc.

(2,) The evidence that defective action of the thyroid may produce these symptoms culminating in eclampsia, including :—(*a*,)The action of iodothyrin; (*b*,) The diuretic effect of thyroid juice; (*c*,) Its antagonistic action to supra-renal extract; (*d*,) Its influence over urea production; (*e*,) Its effect on the liver.

(3,) The treatment of eclampsia and the pre-eclamptic state by thyroid extract.

In the early stages of the disease, where the quantity of urine seems to be less than the average of health, where the pulse tension is unduly high, but before albuminuria has appeared, the thyroid extract may be given in 5 grain doses, night and morning, and after a few days the same dose may be administered thrice daily. Proteid foods should be forbidden at first, but with increasing secretion of urine, and improvement in other symptoms, they may be cautiously resumed.

The question arises as to whether it is possible to indirectly augment or re-establish thyroid function, by supplying iodine to the patient in the form of iodide of potassium. The author thinks that the iodine will be picked out of the blood by the gland, and may be elaborated into the active principle iodothyrin. In this connection it is noteworthy to find that iodide of potassium, in small doses, has been regarded as a specific for puerperal albuminuria. Iodide of potassium infusions, instead of ordinary saline infusions, have been advocated in the treatment of eclampsia.

In giving thyroidin, we are supplying iodine to the thyroid gland. In myxœdema, where there is impaired function of the gland, if we give thyroidin by the mouth, iodine appears in the urine. In the breaking up of this substance, iodine is liberated, and there is no normally acting thyroid gland to absorb it, so it is got rid of. In giving thyroidin in eclampsia we probably obtain all the good effects of giving iodide of potassium, and other effects not produced by the latter drug.

When all the symptoms of eclampsia have appeared, and a fit seems imminent, or if convulsions have already occurred, the author suggests the hypodermic injection of 10 to 15 minims of the liquor thyroidii, repeated every hour. For the immediate treatment of the convulsion, morphine is the remedy of all others—not less than half a grain for the first injection. Eclamptic patients resist the dangerous effects of this drug in a remarkable way. Clarke, of Oswego, has used as much as a grain and a half hypodermically, and Grace reports cases where a grain was employed with good results.

The author says it is possible by the combined use of thyroidin and morphine :—

(1,) To fully and permanently relax arterial spasm.

(2,) To temporarily arrest general metabolism, and, in this way,

tide the thyroid gland over a period during which it may recover its functions.

(3,) To supply artificial iodothyrin to counteract certain symptoms due to its deficiency in the blood and tissues.

(4,) To supply iodine for the elaboration of iodothyrin by the thyroid gland itself, and thus hasten its return to normal activity.

REFERENCE.—[1] *Scot. Med. and Surg. Jour.*, June, 1901.

TRIONAL.

Cases are recorded in which **ill-effects** have followed the administration of this drug. Stewart Hart[1] quotes several such instances, and describes a case in which there was neuritis and hæmatoporphyrinuria. The patient was a lady, aged fifty, who had suffered from insomnia and dyspepsia for many years. She had taken a dose of 15 grains of trional every other day, though occasionally intermitting for three or four days. After two months, she suddenly developed severe abdominal pain of a colicky character, with nausea and vomiting. There was no pyrexia, abdominal tenderness, or distension. These symptoms lasted for several days, rendering rectal alimentation necessary. The administration of trional was stopped, and morphine was administered hypodermically. The urine, which had hitherto been normal, became dark red, and contained a trace of albumin. One day only 12 ounces of black urine had passed. No blood was present. This specimen gave the typical spectrum of hæmatoporphyrin. The pulse became intemittent, and an apex murmur was heard. A few days later there was tingling in both arms, and the knee-jerks were absent. There was pain in the left elbow, and the legs were weak. Tactile and thermic sensations were diminished, but not absent. Paresis appeared in the extensor muscles of the left arm and in the leg. Reaction of degeneration was obtained. From these symptoms the patient slowly and gradually improved, and the heart condition also cleared up. The author considers that trional was the initial cause of this curious combination of gastric and neuritic symptoms.

Sulphonal is apt to produce hæmatoporphyrinuria, and the similarity in chemical constitution of trional and sulphonal warrants such a supposition. The exact course and mode of the production of the hæmatoporphyrinuria by this group of compounds is not as yet known. It has been suggested that some irritation is produced in the kidneys, though others think that the presence of hæmatoporphyrinuria is due to changes in the central nervous system. As regards the neuritis, it is recognised that the increased exhibition of

coal-tar products within the last few years has been followed by a relative increase in the number of cases showing neuritic symptoms.

REFERENCES.—[1] *Amer. Jour. Med. Sci.*, April, 1901; *Brit. Med. Jour.*, May 4, 1901, and June 1, 1901.

TUBERCULIN.

In the *Medical Annual*, 1901, p. 74, an account was given of some recent work with tuberculin R, in the treatment of **Phthisis**, including an abstract of a paper by Dr. G. A. Heron. The recent debate at the British Congress on Tuberculosis, has enabled Dr. Heron[1] to more distinctly formulate his views. He stated that Koch had, in the plainest words, and on several occasions, affirmed that cure of tuberculosis affecting the lungs could only be reasonably looked for, with the help of tuberculin, in those cases where only a small portion of one lung was infected to a slight extent, and where there was no evidence of excavation of lung tissue. He also said it would be reasonable to hope for a cure when only a small portion of each lung was diseased, there being no evidence of excavation. Any increase of the extent of the disease lessened, by so much, the chances of a cure; although even in more advanced cases amelioration of symptoms was likely to result from the use of the remedy. Heron thinks it is not common to find in hospital the cases in which cure of the disease can be reasonably expected. In his experience of private practice, the majority of cases in which he had been asked to advise as to the use of tuberculin had been too far advanced to permit of high hopes for the best result. But when in unsuitable cases the use of tuberculin produces no good result, blame should not rest on the remedy. In his opinion, tuberculin had fallen into discredit:—

(1,) By its frequent use in unsuitable cases.

(2,) By its administration in too large doses.

(3,) By neglect of the rule that a dose of it should never be given until the patient's temperature has been normal for the previous twenty-four hours at least.

(4,) By neglect of the rule, that the dose of tuberculin should never be increased, but, on the contrary, should be diminished, when its administration has been followed by a rise of temperature.

(5,) By the prejudice raised against the remedy, among both doctors and patients, because of the severity of the symptoms which not seldom follow upon its use.

Since March, 1897, the author has used only the new tuberculin. During that year ten cases were treated in hospital. Two of these cases died; one of them was a man whose case was selected because

he was certainly dying. The other eight cases were made up of seven examples of tuberculosis of the lung, and one of lupus vulgaris. They all did well, and left hospital, urging as their sole reason for leaving, their fitness for work, and their wish to resume work. In December, 1900, three years after treatment, the following was the result of the use of tuberculin in these ten cases :—Two were dead, both of them recognised as being hopeless cases from the first ; three were well and supporting themselves by their work ; three were lost sight of ; one remained well until lately, and returned to hospital a few weeks because of a recurrence of disease.

By far the most important communication, after Koch's own, yet made to the literature of tuberculin, was published by Dr. Gœtsch, of Slawentzitz, on May 1, 1901. If the patient can well bear the old tuberculin, Dr. Gœtsch conducts the whole treatment of the case with it, beginning with so small a dose as ·00001 grammes. If this small dose should cause a rise of temperature, Gœtsch goes back to the new tuberculin, giving it in doses of ·001 milligrammes Having felt his way by carefully avoiding the use of doses which would at all raise the temperature, or produce other symptoms of reaction, Gœtsch substitutes in the treatment the old for the new tuberculin. Since 1891, Gœtsch has treated 224 cases of tuberculosis, not of the lung only, but of all tissues. Of these he says he has cured 71 per cent.

Prof. McCall Anderson's[2] views on tuberculin may be summed up as follows :—In the early stages of phthisis it is calculated to yield good results; but in more advanced cases, when a large extent of lung substance has become implicated, it must be used with caution, if at all. But in external tuberculosis it is almost invariably beneficial, and in many cases removes the existing manifestations. It is true that relapses are very apt to occur, if it is not borne in mind that there are two factors concerned in the production of tuberculosis ; (*a*,) the tubercle bacillus, and (*b*,) the soil suitable for its growth and development ; so that in addition to attacking the former with tuberculin, we must endeavour to counteract the latter with the aid of pure air, generous diet, and other recognised anti-strumous measures.

REFERENCES.—[1]*Brit. Congress on Tuberculosis*, 1901 ; [2]*Ibid.*

TUBERCULOL.

This is a new tuberculous toxin, and is used in the treatment of **Phthisis.** It is a clear, thin fluid, but is best kept in the dry form, that is, in brown scales, which are readily soluble in water.

Landmann[1] considers that a preparation of this description should :

(1,) Be fluid and sterile.

(2,) Be capable of killing healthy guinea-pigs in small doses.

(3,) Contain all the specific and active elements of the bacillus culture in an unaltered form.

(4,) Be suitable for subcutaneous use.

(5,) Immunise the animal, and produce antitoxin in considerable quantities.

The author takes exception to Koch's tuberculin R. on the ground that it is only a suspension, that the dose is too large, and that some of the active elements of the culture are excluded by the long subjection to a temperature of 100° C. Neither Buchner's plasmin nor Behring's toxin fulfils the above-mentioned requirements.

The author's preparation is obtained by extraction, first at 40° C. by physiological salt solution, distilled water, and glycerin, and subsequently at higher temperatures, gradually reaching 100° C. The various extractives are mixed and kept *in vacuo* at 37° C. The final residue is wholly inert, showing that all the active elements of the bacilli have been removed in the extracted material. The preparation is subsequently filtered and standardised. The author succeeded by means of this tuberculol in conferring immunity on animals in a large number of experiments. Subsequently he administered it to patients, beginning with a very small dose and slowly increasing; he eventually gives much larger quantities than in Koch's method with tuberculin R.

He avoids exciting any great reaction at first, and extends the injections over a period of about four months, increasing the intervals gradually for fear of any cumulative action of the toxin. He succeeds in conferring a degree of immunity which is retained over a long period, although it is not of high degree.

REFERENCES.—[1] *Hyg. Rund.*, No. 8, 1900; *Brit. Med. Jour.*, July 28, 1900.

UREA.

Henry Harper[1] considers that pure urea is the best remedy for **Tuberculosis** in all forms. He gives it hypodermically, commencing with 40 grains dissolved in 4 drachms of water thoroughly sterilised. Within twenty-four hours there is a marked improvement in the condition of the patient. The injections are usually given daily, for forty-five consecutive days, the dose being gradually increased to 65 grains. In all cases the diagnosis was confirmed by microscopical examination of the sputum. The author says: "All were indisputable tuberculosis, and nearly all were hopelessly bad cases, such as I have never before seen to show any

signs of improvement. From an extensive experience of urea in tuberculosis, it is the only thing that I can call a remedy, and I think its value is best seen in this disease uncomplicated by the various species of cocci."

An account of the action of urea as a diuretic, will be found in the *Medical Annual* for 1899, page 77.

REFERENCE.—[1] *Lancet*, March 9, 1901.

UROTROPIN.

A full account of previous researches on Urotropin will be found in the *Medical Annual* for 1897, 1899, and 1901.

P. J. Cammidge[1] has investigated the action of this drug on normal urine. For this purpose a healthy adult male was selected, and the daily output of urine collected and measured for three weeks. Each day it was quantitatively examined for urea, uric acid, chlorides, phosphates, and sulphates. The specific gravity, reaction, and number of acts of micturition were also noted. The results obtained in the first and third weeks were only used as a standard with which to compare those of the second week, in which 10 grains of urotropin dissolved in an ounce of water, were taken three times a day. It was found that the drug had not any diuretic action, nor was any appreciable change in the excretion of the chemical constituents of the urine observed. Urotropin was found in the urine ten minutes after the first dose was taken, and it still continued to be excreted in small quantities twenty-six hours after the administration had been discontinued. One curious effect produced by the drug was a sensation of formication, which appeared on the fourth day, and was most intense at night, and in parts pressed on by clothing. It became more intense each day, and on the sixth day a diffuse red rash, somewhat like that of measles, appeared. Both rash and irritation quickly subsided after the urotropin was stopped. Usually urotropin is well borne, although Nicolaier speaks of 90 grains a day causing blood and epithelial cells to occur in the urine, and a burning sensation to be complained of in the bladder. The urine passed during the first and third weeks, on standing, was found to quickly decompose, but that of the second week, which contained urotropin, remained clear and free from smell for more than four times as long.

All investigators are agreed that much of the urotropin taken by the mouth is passed unchanged, but there is considerable divergence of opinion as to whether the antiseptic properties of the urine are due to the drug itself, or to some decomposition product arising

from it. It is natural to suppose that if the latter is the case it is the formaldehyde, which is set free to exert its well known bactericidal powers.

The author arrives at the following conclusions :—

(1,) Urotropin alone may, by prolonged heating, be made to yield formaldehyde, but this decomposition does not take place at body temperature.

(2,) An alkaline solution of urotropin may be similarly decomposed, but the body temperature is not sufficient to cause the change.

(3,) Dilute acids quickly decompose urotropin on boiling, with the evolution of free formaldehyde, and this change occurs to a less degree at 37° C.

(4,) Acid salts—*e.g.*, of the urine—liberate formaldehyde from urotropin on boiling, but not at 37° C.

(5,) The acid urine of a person taking 30 grains of urotropin a day does not contain free formaldehyde.

Although the exact chemical nature of the antiseptic body occuring in the urine has not been definitely settled, it seems clear, both from the bacteriological and chemical evidence, that it is not free formaldehyde. It is probable that acid urines produce in the kidney a partial decomposition of the urotropin, by which some body is liberated, or a fresh compound formed which has very marked inhibitory powers over the growth of bacteria. If this hypothesis is correct, an important point in securing the full effect of urotropin in bacterial infections of the urine would be that the urine should be acid in reaction as it leaves the kidney. That this is so is borne out by clinical experience. One condition in which it is pre-eminently useful is typhoid cystitis. Here the urine is generally acid, and the administration of urotropin quickly causes the bacilli to disappear. It has also been found useful in cystitis accompanying enlarged prostate and stricture of the urethra. Here, too, the urine is usually acid as it leaves the kidney, and only becomes alkaline from the ammoniacal decomposition which takes place in the bladder. In suppurative pyelitis and in cystitis, caused by calculus in the kidney or bladder, a similar condition of the urine obtains, and good effects follow treatment by urotropin.

F. Suter[2] finds that 5 or 10 milligrammes of formaldehyde have the same action on three ounces of urine as ½ gramme of urotropin. The action on different bacteria varies but little ; bacilli coli communis and streptococci seem most resistant. The author made experiments with the following medicines administered at night, whilst the urine passed first in the morning was examined : benzoic acid 10 grains,

boric acid 15 grains, salol 15 grains and 45 grains, and urotropin 15 grains. The development of decomposition was retarded only by the strong dose of salol and by urotropin. The efficacy of urotropin being thus proved, its high cost is to be regretted, for this limits its exhibition. It is recommended in cases of surgical interference (even catheterism); in bacteriuria, especially after enteric fever, where it occurs in from 20 to 30 per cent. of all cases; and in cystitis, as an aid to local treatment. It is of little value in pyonephritis, gonorrhœal cystitis, or tuberculosis of the kidney; it is not a panacea for all cases of cystitis, but acts best in ammonia decomposition. It should be used in disease of the prostate gland with residuary urine, and cases of stricture with partial retention, where it is a decided improvement on salol. Doses of from 15 to 25 grains per diem can be given for weeks in succession.

Bolton Bangs[3] agrees that in order to get the beneficial effects of the drug the urine must be acid at the kidney.

W. F. Glenn[4] records a case in which 7½ grains in twenty-four hours could not be borne on account of the extreme vesical irritation. He has never seen nervous chill arise when urotropin had been given a week before the time for operating; large quantities of water should also be administered.

J. Dreschfeld[5] at a meeting of the Manchester Therapeutical Society, stated that he had obtained satisfactory results from the use of this drug in the pyuria of cystitis. It answered well in cystitis due to hypertrophy of the prostate, gonorrhœa, gout, after typhoid fever, and in arsenical poisoning. It was also useful in pyelitis, four of six of such cases doing well with urotropin. One of these cases was undoubtedly tuberculous, and two were calculous in origin. The two unfavourable results were in tuberculous cases. As a solvent for uric acid its value was doubtful, though good resulted in two cases which had resisted other treatment. In one case of gouty sciatica the drug seemed to give much relief. The mode of administration was to give the drug in from 10 to 15 grain doses three times a day in powder form, placed on the tongue, and followed by a drink of water. This dose had been continued for weeks in some cases. Large doses sometimes caused tenesmus and pain in the bladder, and some patients felt sick and depressed when taking it. Bismuth with the powder prevented the nausea.

Reginald Harrison[6] thinks that urotropin is not of much service in the treatment of urethritis, as it seems to have lost its force by the time it reaches the urethra, or perhaps the passage of the drug over the surface is too rapid to allow of much action being excited.

In the uncomplicated suppurative affections of the upper urinary passages, its effect is often remarkable in clearing the urine and removing all traces of pus.

The most striking manifestation of its therapeutic power is in cases of phosphaturia, particularly those in which the urine shows a deposit, several inches deep, in a specimen glass of phosphates of various kinds, the patients suffering from considerable lumbar pain, frequency, scalding, and occasionally hæmaturia. The use of this drug will clear the urine in forty-eight hours, with almost astonishing relief of the symptoms.

When the urine is full of pus and triple phosphates, and is ammoniacal, the drug is not potent enough by itself to do much good, but as an adjuvant to properly performed bladder lavage it is valuable.

Recently a drug, called **Cystamin** (supposed to be a purer form of urotropin) has been introduced. It may be purer, but the process of purification has removed its potency, and it is not so reliable as urotropin.

REFERENCES.—[1]*Lancet*, Jan. 19, 1901; [2]*Ibid.*, Feb. 23, 1901; [3]*Med. Rec.*, May 9, 1900; [4]*Ibid.*; [5]*Lancet*, March 16, 1901; [6]*Polycl.* 1901, vol. iv, p. 92; *Med. Chron.*, May, 1901.

VASOGEN.

David Walsh[1] speaks highly of this substance and its preparations in the treatment of **Eczema** and other skin diseases. He ascertained by a number of comparative experiments that actual absorption took place when rubbed for a sufficiently long period into the skin. This property is specially desirable in cutaneous medication, and in the case of this drug is attributable in part to its peculiar property of forming a stable emulsion with the secretions of the skin and of wounds, as it does with water.

In eczematous conditions the author employs a vasogen iodine ointment, ℥ij subsequently increased to ℥iv in ℥j of vaseline. In chronic palmal eczemas this treatment has proved singularly successful.

REFERENCE.—[1]*Med. Press*, July 3, 1901.

YEAST.

Yeast has been from time to time recommended as a remedy in such various diseases as boils, diabetes, certain gastro-intestinal affections, diphtheria, typhoid, and influenza, but little is known of its action, or what becomes of it after it reaches the stomach.

Nobécourt,[1] in a recent article, summarises present knowledge, quoting from a number of works on the subject which have been published during the last few years. It appears that yeast probably

suffers some diminution of its fermentative power in the stomach, but remains tolerably active, and in the presence of sugar is capable of giving rise to a considerable production of carbonic acid gas. Certain microbes and the chemical products of digestion affect its action, but the most common, such as the bacillus coli among microbes, and lactic acid among chemical products, appear to be without serious influence.

Experiments upon animals have shown that a quantity of glucose which would produce alimentary **glycosuria** ceases to do so if a small quantity of yeast is administered at the same time. It may therefore be possible by the administration of yeast to permit diabetic patients to take a larger quantity of carbohydrate food. Cases have been observed in which the administration of yeast has been followed by symptoms of poisoning, but the quantity taken seems to have been very large, and there does not appear to be any risk of such consequences when given in ordinary therapeutic doses, such as a tablespoonful after each meal.

Elsie Reed Mitchell[2] has used yeast in **Leucorrhœa**. Out of eight cases treated by local applications of yeast, one was entirely unaffected. This was a syphilitic patient, and the discharge was not of local origin. Five cases were still under treatment or passed from under observation, markedly improved, one of these being of known gonorrhœal origin. Two cases were cured, with relapses under, possibly, a re-infection. One case was cured with a relapse after four months. The author observed no unpleasant after-effects. Brewers' yeast was used when it could be obtained; when it was not procurable, compressed yeast gave similar clinical results. A quarter of a cake of "Fleischmann's" was dissolved in half a cupful of water mixed with a teaspoonful of either flour or sugar.

REFERENCES.—[1] *Sem. Méd.*, No. 2, 1901; *Brit. Med. Jour.*, March 30, 1901; [2] *Med. Rec.*, May 26, 1900.

YOHIMBIN.

This substance, which is also known as johimbin, has of late been used as a remedy for **Impotence.** It is said to be an alkaloid or mixture of alkaloids obtained from the Johimbehe bark. Its formula is given as $C_{23}H_{32}N_2O_4$ or $C_{22}H_{30}N_2O_4$, and Oberwarth has determined the lethal dose for guinea-pigs to be $\frac{1}{6}$ of a grain to the kilogramme of animal. In cold-blooded animals, when given in increasing doses, there is a gradual weakening of the functions of the spinal cord, the heart's action is slowed and depressed, and respiration is also depressed. Death is due in frogs to paralysis of the heart's action. Blood-pressure is diminished. In man, according to L. Löwy's[1]

researches, it has a distinct action in the genital sphere. Doses of yohimbin hydrochloride of from $\frac{1}{10}$ to $\frac{1}{6}$ of a grain in water, 1 in 500, produce a marked congestion of the ovaries and testicles, with swelling and increase of sexual desire.

Prof. E. Mendel,[2] of Berlin, used yohimbin in forty cases of impotence, partly as a subcutaneous injection, partly internally (solution of yohimbin from 5 to 10 drops three times a day). No untoward influence was noticed in any of the cases. The employment of the remedy showed no influence whatever in impotence due to tabes or other organic diseases. In a number of cases, however, where impotence was due to irritable weakness or paralytic impotence, a marked benefit was noticeable.

Berger[3] gives his experience of the use of yohimbin as an aphrodisiac. His cases—seven in number—were given a fluid form of the drug, of the strength of 1 dgm. to 20 c.cm., and 20 drops of this solution represents 5 mgs, that is, $\frac{1}{10000}$ grs. Five patients were suffering from "paralytic impotence," while two were sexually healthy, and merely received the drug to prove its absolute harmlessness. Of the five patients, four had previously suffered from gonorrhœa. They all showed sexual incompetence. The exhibition of the drug produced erections and capability for coitus after a few days; but this effect passed off after a time. He advises that 5 mgs, should be the initial dose, and that if the desired result is not obtained in a week, 10 or 15 mgs. should be given.

A. Eulenburg states that he has used it in a 1 per cent. solution, in doses of 10 drops, and in 5-mg. tablets, in cases of neurasthenic impotence, with excellent results, and he strongly recommends it as an aphrodisiac.

It may be mentioned that yohimbin is a very expensive remedy, and that at the price at which it is now sold, its use, except for the wealthy, is prohibited.

REFERENCES.—[1] *Therap. Monat.*, 1900, vol. xiv, p. 597; *Berlin klin. Woch.*, Oct. 15, 1900; [2] *Therap. der Gegen.*, July, 1900; *Therapist*, Oct. 15, 1900; *New York Med. Jour.*, Nov., 1900; [3] *Deut. Med. Woch.*, April 25, 1901.

TOXINS AND ANTITOXINS.

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The chief advances that have been made in our knowledge of immunised serums during the past year concern the specific chemical action, and lend support to the view of Behring and Ehrlich that

the toxin-antitoxin reaction is purely chemical in nature. For an account of Ehrlich's "Lateral Chain Theory," see *Medical Annual*, 1901, p. 63.

Cobbett,[1] in a paper on "The Nature and Action of Antitoxins" arrives at the following conclusions :—

(1.) Certain reactions have been observed to take place between these substances outside the animal body (venom, vein, crotin, tetanus-toxin, eels' blood serum, and their corresponding anti-toxins).

(2,) The success of various attempts to separate the active bodies from neutral mixtures have been, in some instances, shown to depend upon the fact that insufficient time for their complete union was allowed ; separation being no longer possible if this were granted.

(3,) The accuracy of the libration of toxins and antitoxins, to within 1 per cent. of error.

(4,) The fact that to save an animal from 1,000 fatal doses of diphtheria toxin, requires little more than 100 times as much antitoxin as is required for the fatal doses.

(5,) The fact that the potency of antitoxin is greatly increased if it is allowed to come in contact with the toxin outside the animal body ; and is, under certain circumstances, increased still further if allowed to remain for some time in contact with the toxin at a suitable temperature.

The author believes, with Behring and Ehrlich, that the toxin-antitoxin reaction is purely chemical.

W. Myers[2] studied the venom of the cobra, and in an excellent paper "On the Interaction of Toxin and Antitoxin, illustrated by the Reaction between Cobralysin and its Antitoxin," states that he found two active principles in cobra venom, one of which he calls *cobralysin*, the other *cobranervin*. The former acts upon the erythrocytes, which it dissolves ; the other upon the nerve cells. His experiments are similar to those of Ehrlich upon the diphtheria toxin and antitoxin reaction. The author found that the cobralysin is destroyed by heat, and is neutralised by anti-venomous serum, while neither may affect cobranervin. He found that the anti-hæmolytic action of the serum was no indication of its anti-venomous activity, as it may happen that cobralysin is neutralised while cobranervin remains free. It is only when the minimum fatal dose is used that the neutralisation of the hæmolytic and lethal properties runs hand in hand. With multiples of the minimum fatal dose a non-hæmolytic mixture of venom and antivenene may kill a guinea-pig fairly rapidly. These facts show that the two poisons are distinct, and that a serum may possess an anti-lysin which,

considered in relation to a particular venom, is in excess of the anti-venene. The susceptibility, *in vitro*, of the red blood corpuscles of various animals bears no relation to the susceptibility of those animals to cutaneous inoculations of the venom, so that in the lethal properties of the venom the cobralysin plays an insignificant part. In solutions of venom the formation of toxoids readily occurs.

Antivenene.—Semple and Lamb[3] discuss "The Neutralising Power of Calmette's Anti-venomous Serum: Its Value in the Treatment of Snake-bite." Fault has been found with Calmette's method of estimating the value of the serum, because there is no direct estimation of the amount of venom which a given quantity of serum will neutralise, inasmuch as no account is taken of the fact that the untreated animal is capable of surviving the injection of a certain quantity of venom. The authors, however, think that such exceptions are unwarranted. Thus, if a toxin have a minimum fatal dose of 0·35, 0·3 not being fatal, and 1 c.c. of a serum protects against 10 minimum fatal doses, or 3·5, the 1 c.c. is capable of neutralising 3·5—0·3 = 3·2. We are not entitled to believe it capable of neutralising the full amount, but the difference is slight, and when 100 fatal doses are administered the difference need scarcely be considered. They review the work of Martin and Cherry,[4] who worked with 8 minimum fatal doses of mixed venoms, and found that 1·5 c.c. of the serum mixed *in vitro* with the poison is able to counteract that test dose. They found the minimum fatal dose for rabbits to be 0·000025 gr. per kilogramme of body weight, animals being able to survive 0·00002 gr.; 1·5 c.c. of the serum is therefore able to neutralise at least 0·00018, 1 c.c. at least 0·00012. They found that 1 c.c. fails to neutralise the 8 minimum fatal doses, so that 1 c.c. fails to neutralise 0·00018. From this it is obvious that Calmette's serum neutralises something between 0·00012 and 0·00018 gr. of the venom.

Calmette's claim is 20,000 immunity units, according to his method of enumeration, in 10 c.c. 1 c.c. injected intravenously into a 2-kilogramme rabbit five minutes before the venom, is able to counteract a dose which would kill a control rabbit in from fifteen to twenty minutes. Semple and Lamb found the lethal dose of Calmette's venom to be 0·00035 gr. per kilogramme body weight, 0·00025 gr. per kilogramme being the maximum non-lethal dose. The dose which kills a 2-kilogramme rabbit in twenty minutes is equal to 3 lethal doses, *viz.*, 0·002 gr. It is obvious that 1 c.c. of a serum which contains 20,000 of Calmette's units per 10 c.c. would have to neutralise at least 0·002 (*i.e.*, 3 minimum fatal doses for a 2-kg. rabbit)—0·0015

gramme of venom to prevent the death of the animal. This, then, expressed in weight of snake venom, is the neutralising power which Calmette attributes to his serum.

In a second series of experiments, six times the minimum fatal dose of venom was employed, *viz.*, 0·002 gr. per kg. body weight of rabbit, this quantity killing in three minutes. This mixture was allowed to stand in the laboratory at its temperature for one-half hour, then injected in the marginal ear-vein. 1 c.c. failed to counteract the 6 fatal doses, while 1·25 c.c. accomplished the object. We have, therefore, arrived at the result that 1 c.c. of serum fails to neutralise 0·002 gr.—0·00025 gr. = 0·00175 gr., while 1·25 c.c. is able to neutralise this amount at least—namely, that 1 c.c. can neutralise at least 0·0014 gr., while it fails to neutralise 0·00175 gr.

In a third series they endeavour to ascertain what was the neutralising power of the serum when injected five minutes before the venom. Practically the same results were obtained in this case as when the mixture was made *in vitro*.

The results obtained by their experimentation, therefore, exactly confirmed Calmette's statements. In trying to reconcile their results with those of Martin and Cherry, Semple and Lamb found that the venom at their command was only one-tenth as strong as that used by Martin and Cherry. By a carefully-made estimation of the quantity of venom injected during snake-bite (0·019 gr.), and calculating that 1 c.c. of the serum neutralises 0·001 gr., it was calculated that for a man of 120 lbs. the curative dose of anti-venomous serum should be between 15 and 20 c.c. In all points, therefore, Calmette was confirmed.

J. W. W. Stephens,[5] in a paper on "The Hæmolytic Action of Snake-toxins and Toxic Sera," arrives at the following conclusions :—

(1,) That antitoxic sera can act upon toxins other than but allied to that used in the preparation of the serum.

(2,) That the hæmolytic constituents of snake toxins, and hence snake toxins as a class, are not identical.

(3,) That against a minimum lethal dose of daboia toxin 0·5 c.c. of Calmette's antivenene has very little action.

(4,) That the antihæmolytic properties of anti-venomous serum must be increased in order to afford any efficient protection, *e.g.* against pseudechis toxin or daboia toxin.

Walter Myers,[6] in a paper on "The neutralisation of the Hæmolytic Poison of Cobra Venom (Cobralysin) by Anti-venomous Serum," describes his method of investigation. The minimum hæmolysing dose for human blood was first ascertained, a large multiple of this

dose taken, and the necessary amount of anti-venomous serum to secure neutralisation determined. The same multiple was again taken with a less quantity of antitoxin. The hæmolytic powers of this mixture were then tested. In this manner the quantity of toxin remaining unneutralised could be estimated. Then, using $\frac{1}{15}$ of the antitoxin necessary for complete neutralisation, he found that $\frac{4}{5}$ of the toxin had been neutralised. With $\frac{1}{6}$, $\frac{9}{10}$ were neutralised. He pointed out the peculiarities of this neutralisation, which could be partly explained by the action of the products of the reaction of the toxin and antitoxin in reversing the chemical process. In the case of the complete neutralisation of a large quantity of the poison, it would therefore be necessary to add more than the chemical equivalent of antitoxin ; but in partial neutralisation the excess of free toxin that was present made the presence of free antitoxin impossible, because under these circumstances the two would inter act and the antitoxin disappear. He shows the changes exhibited by dilute solutions of the poison at different temperatures, consisting in diminution of the toxic power, unaccompanied by changes in the power of combining with antitoxin. Toxoids were therefore produced—*i.e.*, bodies which interacted with the antitoxin, but were non-hæmolytic.

As bearing upon the nature of these substances, his experiments showed that the toxoids of diphtheria did not, even in large quantity, affect the union of cobralysin with its antitoxin, nor the union of tetanolysin with anti-tetanolysin. Within these limits, at any rate, the toxoids are specific. He further showed that the toxoid that was first produced was characterised by its great affinity for the antitoxin (protoxoid), but he maintained that this fact was not proof of the existence of several kinds of toxin in the cobralysin. It was unnecessary to assume that part of the toxin had a greater affinity for the antitoxin than the rest, was speedily susceptible, and gave rise to prototoxoid. The hypothesis of the presence of one toxin only, the first change in which was the formation of prototoxoid, would explain the neutralisation charts shown in the paper. It was at present impossible to measure the amount of toxin present, as there was no evidence how far the reaction between the equivalent parts of toxin and antitoxin was complete.

In a subsequent paper on " The Standardisation of Anti-venomous Serum," the author[7] suggests that anti-venomous serum might be standardised with mice, guinea-pigs not being appropriate, because the necessary quantity of horse serum has been shown by Cobbett[8] to be toxic for them. Using mice of 15 gr., it was possible to locate

the minimum fatal dose of cobra poison within 20 per cent. of error. 0·012 mg. killed in three to four hours ; 0·12 mg. (10 m.f.d.) was used for testing. 0·12 mg. was given the mouse together with the quantity of serum necessary to neutralise it measured, the mixed venom and serum being allowed to stand at room temperature for half an hour before injection. The neutralisation to ten times the minimum fatal dose of venom could be determined within 15 per cent.

On comparison, the method of mixing the venom and serum *in vitro* and testing upon mice was found to be more accurate than Calmette's method of using rabbits. For example, when rabbits of 2,000 gr. were used, 0·5 mg. of the dry venom per kg. killed in twenty minutes. When 0·3 c.c. of the anti-venomous serum per kg. had been injected five minutes previously, the animal died in one and a half hours. With 0·4 c.c. of serum, or more, the animal lived and showed no symptoms. 0·5 mg. of venom is here neutralised by 0·4 c.c. of serum ; hence 0·12 mg. would be neutralised by 0·096 c.c. With mice, however, using the same serum, 0·2 c.c. was required to neutralise 0·12 mg. of the poison. When 0·175 c.c. was used, the animal died in three hours. The latter method is therefore more accurate. This method of testing with unheated venom is therefore cheap, simple, and accurate for clinical purposes. We may, therefore, for convenience call a unit of immunity that quantity of antivenene which neutralises ten times the minimum lethal dose of cobra poison for a mouse of 15 gr. A serum, for example, of which 0·2 c.c. was required to neutralise the test dose, would contain 5 units per c.c. Greater accuracy will be attained when the serum can be made strong enough to act against 100 minimum fatal doses.

Tuberculosis.—Baradat,[9] of Cannes, draws attention to the generally accepted theory that there are two factors in the etiology of tuberculosis, the infectious agent and the soil on which it develops, the characteristics of which are either acquired or hereditary, and insists that for the purposes of treatment the one is as important as the other, and after a survey of various forms of treatment proceeds to give his experience on the use of serum therapy, founded on the supposition that the blood of certain animals confers on other animals immunity from tuberculosis. His view is not only that the serum of goat's blood is antitoxic and bactericidal, but stimulating and regenerative. He quotes Landouzy, who maintains that it is this idea of helping those who are in the incipient stage, at a time when the germs of secondary infection have not yet attacked them, that has led medical men to make use of immunising agents that are

antitoxic or bactericidal owing to their strengthening action on phagocytosis. Baradat also refers to the theory of Metschnikoff, who regards the sera not as antitoxic, but as stimulating agents of phagocytosis, or, in other words, provokers of organic resistance. The serum of the goat has been used in cases of tuberculosis by various observers with varying success. Baradat states that the use of this serum has given him successful results. He administers one hypodermic injection of 2 c.c. of the serum every other day. In some cases he has observed after each injection an exaggeration of cellular activity, showing itself in the shape of fever, erythema, and dyspnœa; in such cases he administers the serum by mouth, but in order to obtain the same tonic and stimulating effects the dose must be increased from 2 to 10 c.c.

Anti-typhoid Inoculation.—Prof. A. E. Wright, of Netley,[10] has published a valuable summary, the results of which are given in the following tables:—

TABLE I.—RESULTS OBTAINED BY THE ANTI-TYPHOID INOCULATIONS IN THE CASE OF THE OFFICERS AND MEN OF THE MILITARY GARRISON DURING THE SIEGE OF LADYSMITH.

	Number under Observation.	Number of Cases of Enteric.	Proportion in which attacks stand to Total Number of Men in Group.	Number of Deaths from Enteric.	Proportion in which Deaths stand to Total Number of Men in Group.	Proportion in which Deaths stand to Total Number of Attacks in Group.
Not inoculated...	10,529	1489	1 in 7·07	329	1 in 32	1 in 4·52
Inoculated ...	1,705	35	1 in 48·70	8	1 in 213	1 in 4·40

TABLE II.—RESULTS OBTAINED BY THE ANTI-TYPHOID INOCULATIONS IN THE CASE OF THE OFFICERS OF THE MILITARY GARRISON DURING THE SIEGE OF LADYSMITH.

	Number under Observation.	Number of Cases of Enteric.	Proportion in which attacks stand to Total Number of Men in Group.	Number of Deaths from Enteric.	Proportion in which Deaths stand to Total Number of Men in Group.
Not inoculated...	171	43	1 in 4	5	1 in 34·2
Inoculated ...	44	9	1 in 5	2	1 in 22·0

The author points out that, so far as is known, with hardly an exception, the men who are set down as inoculated were only once inoculated. It seems probable, from the fact that only two cases among twice-inoculated persons have been reported, that second inoculation confers a considerable additional protection.

It is possible that some of the officers who are set down as inoculated may have been inoculated with an anti-typhoid serum, and not with a vaccine consisting of a sterilised typhoid culture. Two or three instances have been reported where this error was committed in the case of officers proceeding to South Africa. In the case of the statistics now in question, the date and place of inoculation are in the case of five out of the nine officers attacked set down as unknown.

It is possible in the case of the men, as distinguished from the officers, that re-vaccination against small-pox, which, like anti-enteric inoculation, was in many cases carried out on board the transports, may in certain instances have been confused with the latter inoculation.

It is possible that, owing to the exigencies of military service, the full prescribed dose of typhoid vaccine may not in all cases have been injected. It is conceivable, but there is nothing either to support or rebut the suggestion, that some reduction of the dose may have been found necessary in the case of the Liverpool Regiment, which was inoculated (presumably, as in the case of other regiments, only very partially inoculated) at Ladysmith on the eve of the outbreak of hostilities. At any rate, it is noticeable that this regiment furnished thirteen cases of enteric among the inoculated men, whereas the whole of the rest of the garrison of Ladysmith furnished only an equal number of such cases.

In view of the above points, it is impossible to determine precisely to what extent the inoculated were protected by inoculation. But the results set forth in Table I. appear to be distinctly encouraging, inasmuch as they show that the proportion, on the one hand of attacks, and on the other hand of deaths, from typhoid was seven times smaller in the inoculated than in the uninoculated, and it may be borne in mind that if the number (no doubt a considerable one) of men who had previously suffered from typhoid had been subtracted from the number of the uninoculated, as might quite legitimately have been done, the statistics would have borne an even more favourable aspect.

Tetanus Antitoxin.—Wilms[11] does not speak very enthusiastically of the use of this serum in **Tetanus.** He says that in acute cases it is useless. He emphasises his opinion that, even with the strictest

adherence to Behring's directions, the treatment should be commenced within thirty hours of the onset, and no fewer than 100 units should be injected at a time. He records two cases of chronic tetanus in which recovery took place, independently of the injections. In one case the onset of tetanic symptoms was noted eight days after an injury to the knee. Behring's serum was injected from the first day; no improvement followed, and the patient died on the fourth day of the tetanus.

In another case tetanus developed on the eighth day after an injury to the leg; 250 units were injected within twenty-four hours of onset, and the patient died the same day.

In a third case, seven days after an injury, caused by a plough, to the right foot, the patient developed trismus; 125 units were injected within twenty hours, followed by an equal dose in three hours, and next day by 250 units—death on the third day.

The next case was that of a man who sustained a severe injury to his hand, and nine days later developed symptoms of tetanus. Tizzoni's serum was injected on the first evening. Within thirty hours he received 4,000,000 Tizzoni's units, and on the second, third, fourth and fifth days, 1,000,000 units each day. Death followed on the sixth day.

Another case was that of a man who, three weeks after a slight injury, developed trismus. Antitoxin was not available at first, but on the eighth day was injected. The course of the illness was protracted, and after forty days the symptoms disappeared. The author adds that had he injected this case early, it would have been tabulated under the head of successes for antitoxin. The next case was a compound fracture of the patella, showing symptoms of tetanus twenty-one days later. A single injection of Behring's antitoxin was made on the third day, and recovery took place on the eighteenth day.

Prof. M. Poucet[12] apparently thinks little of the tetanus antitoxin. Jinnosuke Tsuzuki[13] has investigated this subject experimentally. The best results are obtained with those animals which are most susceptible to the tetanus toxin. Thus a guinea-pig, which is very susceptible to Behring's toxin, is more easily saved than a rabbit, which is less susceptible, because in the first case the minimum fatal dose of toxin is much less than in the second, and consequently requires less antitoxin to neutralise it. The correctness of this explanation is shown by the fact that a rabbit poisoned with Tizzoni's toxin, which is not more dangerous to mice than to rabbits, is just as easily saved by antitoxin as is a mouse.

When tetanic symptoms have once appeared, the possibility of cure depends on several factors :—

(1,) The original dose of toxin injected must not be more than twice or possibly three times the minimum fatal dose. If the dose be larger life may be prolonged, but never saved.

(2,) Antitoxin must be injected within twenty-four hours of the injection of toxin. If the treatment is begun later, success is doubtful in the case of mice and guinea-pigs, even if the dose of toxin has but little exceeded the minimum fatal dose. For larger animals, in which there is an incubation period of several days after a single minimum fatal dose of toxin, there is more chance of cure with delayed treatment.

(3,) If the toxin be injected intracerebrally, antitoxin always fails, probably because the poison becomes at once fixed in the cerebral cells.

(4,) The direct strength of a tetanus toxin is measured by the bodyweight in grammes of an animal which is killed with certainty by 1 gramme of the toxin. The indirect strength of a toxin is its antitoxin-neutralising power. Some toxins, although possessing comparatively little direct toxicity, have a very high indirect activity ; these require a good number of antitoxin units for neutralisation, and give a less chance of cure than many toxins of much greater direct activity.

(5,) Tizzoni's antitoxin is $6\frac{2}{3}$ times less powerful than Behring's.

(6,) The action of antitoxin is uninfluenced by its solution in distilled water, normal saline solution, or blood serum.

(7,) If some indifferent fluid be injected hypodermically, together with or immediately after the injection of the toxin, the resulting disease runs a milder course than in animals in which no injections of indifferent fluid have been made ; but if such injections be made in a part of the body remote from that in which the toxin was injected, or some time after the injection of the toxin, no effect is produced.

REFERENCES.—[1] *Jour. Path. and Bact.*, 1899-1900, p. 193 ; [2] *Ibid.*, p. 415 ; [3] *Brit. Med. Jour.*, April 1, 1899 ; [4] *Ibid.*, 1898, p. 1,120 ; [5] *Jour. Path. and Bact.*, 1900, p. 273 ; [6] *Trans. Path. Soc.*, 1900 ; *Brit. Med. Jour.*, Feb. 10, 1900 ; *Lancet*, Feb. 18, 1900 ; [7] *Ibid.* ; May 19, 1900 ; [8] *Proc. Roy. Soc.*, 1899 ; [9] *Lancet*, Aug. 24, 1901., [10] *Brit. Med. Jour.*, July 14, 1900 ; [11] *Münch. Med. Woch.*, Feb. 5, 1901 ; [12] *Med. Press*, Nov. 14, 1900 ; [13] *Arch. Internat. de Pharm.*, vol. viii, 1901 ; *Brit. Med. Jour.*, April 20, 1901.

Part II.

The Dictionary of Medicine and Surgery.

ABDOMEN (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Gunshot Wounds.—In the "Annual" of last year (1901, p. 101) is a summary of the views of Sir William McCormac and of Sir Frederick Treves, derived from their experiences in South Africa. Further reports have since that time appeared from other surgeons on their return from service. Among these we may refer to Makins in his "Surgical Experiences in South Africa," London, 1901, and Bowlby in "A Civilian War Hospital," London, 1901, in which mention is also made of observations by Watson Cheyne, Cheatle, and others. These authorities agree with McCormac and Treves in finding practically no opportunity for immediate surgical interference, but the outlook is a gloomy one The spontaneous recoveries without symptoms after a bullet has entered the abdominal cavity form only a small percentage. Many die immediately, or very quickly, from shock and hæmorrhage. As regards hæmorrhage, many surgeons in South Africa at first stated that the wounded brought in showed but little evidence of bleeding. But the inspection of the dead lying where they had fallen, and the statements of soldiers who had seen their comrades struck, clearly show that there were numerous instances of deaths attended by severe external as well as by internal hæmorrhage. A number of those shot through the abdomen died within a day or two of being wounded, in some cases even later, from severe secondary hæmorrhage. None of those wounded in the abdomen at Talana Hill seem to have recovered. Hence, in those who recovered without symptoms, it must be concluded that the small intestine had entirely escaped. Bowlby quotes a case in support of this point, examined by Cheatle. A private was shot right across the abdomen, and died forty-eight hours later. The bullet had entered low down in his right lumbar region and had emerged near the left anterior superior spine of the ilium. It was a "Jeffrey's sporting bullet." At the *post-mortem* examination the bullet was found to have passed through the cæcum close to its posterior wall, the holes being very minute; it had also passed out through the sigmoid flexure, in which

a large rent was made. From the foregoing it is clear that the bullet must have passed obliquely right across the abdominal cavity from behind forwards, yet forty-eight hours after the injury the coils of the small intestine showed no wound nor abrasion in spite of the most careful search, and there was no sign of peritonitis nor extravasation. "As far as we are aware," adds Bowlby, "the actual proof afforded by the demonstration of wounded small intestine which has healed is wanting—we, at least, do not know of any such case." Bowlby and Makins agree with Treves that bullets passing through the true pelvis may do little damage, but above this it seems very uncertain whether any particular direction is more favourable than another.

Whilst it must be admitted that it has been impracticable and not advisable in most cases to operate for abdominal wounds in the present war, the expectant treatment does not hold good for gunshot wounds in civil practice, where the patient comes quickly under the care of the surgeon fully prepared to treat an abdominal case. Admitting that a small percentage of those wounded by a bullet traversing the abdomen may continue to present no symptoms, yet the earliest signs of peritoneal hæmorrhage or intestinal perforation is sufficient to indicate an immediate operation. A few cases even in the present war have been thus operated upon early with success. As the matter now stands, the fact alone of a bullet having traversed the abdomen may not in itself be sufficient indication, but the earliest symptoms of peritoneal hæmorrhage or perforation demand an abdominal operation, supposing that this can be carried out under favourable circumstances. Such a case is quoted by Bowlby from the Philippines: "A private, whilst at target practice, was struck by a ricochetted Krag bullet, which entered two inches above the border of the ribs in the left mammary line and, taking a downward and backward course, lodged in the left loin. As the man was received into hospital an hour after the injury, Robinson, contrary to the usual course, decided to operate. The abdomen was opened in the middle line and a large amount of free blood and clots removed. It was found that the ball had passed through the omentum and mesentery, but that the intestines had entirely escaped injury. The bleeding arteries were tied, and primary union resulted." A successful operation was also reported by Neale.[1] There was much blood in the peritoneal cavity; the small intestines were found cut right across with four other perforations, requiring a resection of 15 inches of gut (Czerny-Lembert suture). Recovery without a bad symptom.

Apart from a wound, it is possible for the intestine to be ruptured simply by the contusion of a spent bullet. Watson Cheyne describes

a patient who was struck on the abdomen just to the right of the umbilicus by a spent bullet which did not perforate the skin. He died three days later with acute suppurative peritonitis. Rents were found, *post mortem*, in two adjacent coils of intestines; one, about 1 inch in length, was clean cut and went through all the coats; in the other it was as though a knife had been drawn obliquely across a wrinkled intestine, so that in three places it divided through the serous coat alone, while at one end all the coats were penetrated. Where the bullet struck the skin there was a small slough, and underneath this a cavity containing pus, gas, and sloughing tissue, communicating with the peritoneal cavity by a small opening. The case had been, therefore, one for a surgical operation.

Pistol bullets are more frequently the cause of gunshot injuries of the abdomen in civil life. In such cases the larger experience of surgeons in the United States continues to support operative measures at the earliest moment. Cases are recorded by Martin, Brewer and Woolsey.[2]

Martin's patient had a perforation of the liver, gall-bladder, hepatic flexure of the colon, of the small intestines in two places, and of the rectum in one, causing intra-peritoneal hæmorrhage. A man, aged twenty-four, had been wounded by a pistol bullet of 32 calibre, and twenty hours later had a distended abdomen, a pulse of 120, temperature 102°. He recovered in four weeks.

Brewer's case was a negro, aged thirty-two, operated on one hour after injury by a pistol bullet of 32 calibre, which caused eleven perforations, necessitating two resections; Woolsey's case had sixteen perforations involving one resection. Both recovered.

Local Anæsthesia.—Local anæsthesia has been much recommended for use in exhausted cases for intra-abdominal operations. It may be very much doubted whether such patients are made in any way worse by the administration of ether. There appears to be very little exact evidence against ether; cases vary so much according to the length of the administration and also according to individual peculiarities. It may be doubted whether the effect of local anæsthesia is worthy of the term "anæsthesia." It rather depends upon resolution and patient forbearance on the part of the sufferer. Those who have used the method lay stress upon the pain caused by the terminal nerve twigs in the abdominal wall and the necessity of avoiding them, and upon the sensitiveness of the parietal peritoneum, of which, owing to the use of general anæsthesia, surgeons have not had, except in cases of injury, much experience. Lennander[3] is forced to advise a complicated method: First, a subcutaneous injec-

tion of morphine, then Schleich's infiltration of the abdominal wall, then the patient is put under chloroform or ether for opening the peritoneum. The abdominal incision is made a large one, so that it need not be retracted, for this is a source of pain when only local anæsthesia is used. All adhesions must be separated under the general anæsthesia, then compresses and pads inserted. Local anæsthesia may be employed if the operation is upon one of the viscera, the visceral peritoneum being comparatively insensitive. Next, the general anæsthetic must be again administered whilst the pads are being withdrawn and the parietal peritoneum is sutured. After this the operation is completed under local anæsthesia.

A surgeon who reads this account must feel disinclined to put aside the general anæsthetic, but will feel that he can much more quickly get through the operation if the general anæsthetic is given carefully, the proper depth of anæsthesia being employed according to the stage of the operation.

On the other hand, patients in shock and collapse scarcely require any anæsthetic at all, and, indeed, are given but very little by a skilful administrator. The cases reported by Morse[4] are of this kind, so much so that simply freezing the skin was all that was needed. His two cases done after the injection of eucaine died; they would have doubtless also died had ether been given. (See also "Anæsthesia by Cocaine").

Rare Tumours of Abdomen —Included Fœtus or Abdominal Teratoma.—Wright and Wylie[5] describe a remarkable tumour distending the abdomen of a child aged two months. It had, indeed, caused a difficulty at birth, and had rapidly increased. It was tapped, and nearly a pint of clear, yellow, slightly albuminous fluid containing a trace of urea withdrawn. It was removed by a left lumbar incision, when it was found not to belong to the kidney, but to be encapsuled, and was shelled out by pushing the colon downward. A number of large veins in the capsule were clamped, but there was no pedicle. The child died of shock the same day. The tumour had been situated in the lesser peritoneal cavity. The great omentum covered it in front; the stomach had been pushed into the left hypochondrium. Illustrations and a full description of this included fœtus are given. by Wright and Wylie in the *Brit. Med. Jour. (see Plate I., Figs. A, B).* Lexer[6] gives a very similar case.

References.—[1]*Brit. Med. Jour.*, 1900, ii, March 10, p. 604; [2]*Ann. Surg.*, 1901, pp. 311, 474; [3]*Therap. Gaz.*, May 15, 1901; [4]*Lancet*, May 11, 1901, i, p. 1322; [5]*New York Med. Jour.*, March 24, 1900, p. 405; [6]*Brit. Med. Jour.*, Nov. 17, 1900, ii, p. 1428.

PLATE I.

ABDOMINAL TERATOMA.

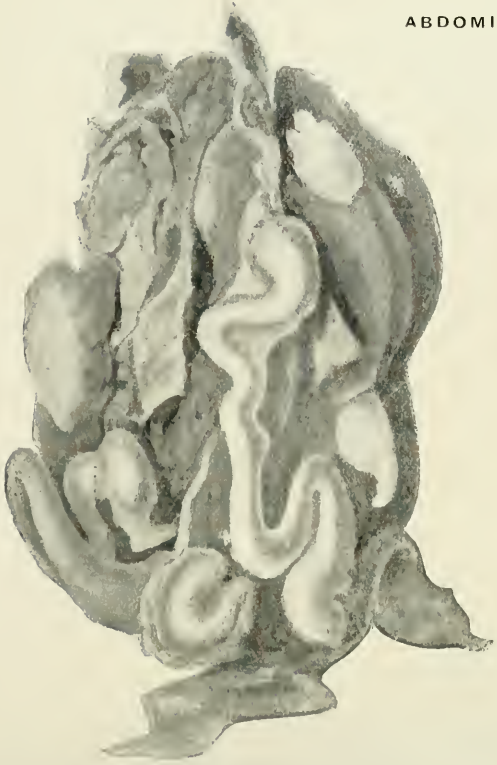


Fig. A.

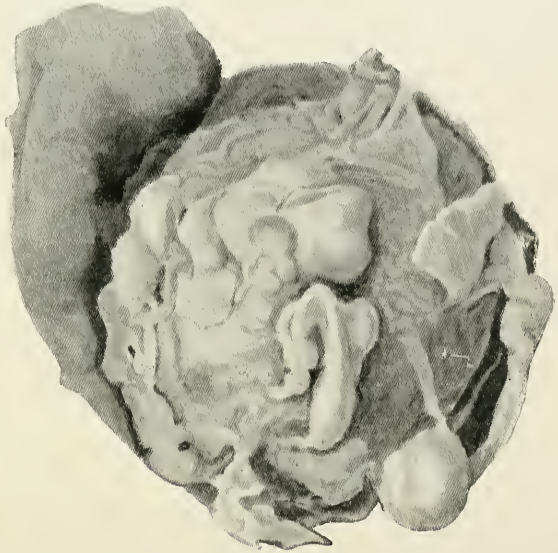


Fig. B.

ABDOMINAL ORGANS (Displacements of). *R. Hutchison, M.D.*

Boardman Reed[1] lays down the following propositions :—

(1,) Loose and moveable kidneys, which term may be made to include the aggravated stage known as floating kidneys, rarely constitute a single or independent pathologic condition, but nearly always form part of a general disturbance of the abdominal contents, involving also either a dilatation or displacement of the stomach and transverse colon, as well as, in most cases, a marked sagging downward of the small intestines. Exceptionally the liver and spleen also sink below their proper positions.

(2,) This abnormality of the stomach, intestines, and other organs, notwithstanding assertions to the contrary, is in no sense a consequence of the looseness of one or both kidneys, but all result from a common cause.

(3,) The group of displacements, etc., under discussion was first fully described by Glenard in 1887, though in part recognised by others at an earlier date. It was called by him enteroptosis, but a more appropriate name is splanchnoptosis. It is also known as Glenard's disease. Chief among its many injurious results are constipation, nervous dyspepsia (in the earlier stages), and catarrh in various parts of the gastro-intestinal tract ; also neurasthenia, anæmia, insomnia, weak heart, and other symptoms dependent upon the auto-intoxication secondarily induced.

(4,) A very large proportion of uterine flexions and versions in the non-child-bearing woman certainly, and probably also in parous women, are for the most part a direct mechanical result of the pressure from above of displaced organs and their contents.

(5,) Displacements of the abdominal viscera are very much more frequent in women than in men.

He attributes the frequency of such cases amongst women to tight-lacing and other harmful modes of dress. He does not believe in operation in these cases, but treats them by the ordinary dietetic means, **Tonics, Massage,** intra-gastric **Faradism,** reform of the dress, and the use of mechanical supports if necessary. He is of opinion that the enormous frequency of these conditions, and their seriousness, are little understood by the profession at large.

Alexander Marcy, Junr.,[2] divides the treatment of floating kidney into : (1,) Medical ; (2,) Mechanical ; (3,) Surgical.

(1,) The medical treatment would consist in the use of such measures as will improve the general health of the patient, together with the accumulation of surplus fat. The rest treatment, with forced feeding and massage, is sometimes beneficial temporarily.

but as soon as the patient returns to her ordinary duties the condition is, in most cases, reproduced. Toning up the nervous system, as well as the digestive apparatus, relieves the effects of this condition sometimes, but must of necessity only be temporary. For this purpose the author knows nothing equal to tincture of **Nux Vomica** in large doses, together with **Cold Douching** of the spine, followed by brisk rubbing.

(2,) The mechanical treatment consists in the use of elastic bandages, sometimes fitted with a special pad, called a kidney pad; and in some cases this device relieves the symptoms, but it is doubtful if it ever keeps the kidney in its proper place.

(3,) The ideal treatment is surgical, and with our improved methods and technique is attended with practically no mortality when it is not complicated by other abnormal conditions.

See also "Kidney."

REFERENCES.—[1] *Therap. Gaz.*, Sept. 15, 1899; [2] *Jour. Amer. Med. Assoc.*, Feb. 9, 1901.

ABERRATIONS (Emotional). (See "Insanity.")

ACNE. *Norman Walker, M.D.*

The observations of Sabouraud and Gilchrist that acne is due to a specific bacillus have been confirmed by several other investigators. There is nothing very new with regard to the treatment. **Soap** and **Sulphur** still hold their position at the head of local treatment. The following lotion has been recommended[1]:—

℞	Sulph. Præcip.	℥ss	Aquæ	℥viij
	Spt. Camph.	℥ijss		

A good word is also spoken for the old popular treatment by the internal administration of **Yeast**, which can now be obtained in a more handy form under the name of levurine.

Sigalas,[2] dealing with the treatment of hypertrophic acne, says surgical measures are required. **Electro-cauterisation** is preferred by some; it must be frequently repeated, and large masses may be caused to disappear. Brocq recommends **Electrolysis**, the needle being introduced through the orifices of the sebaceous glands. Ollier[3] recommends the knife as the most thorough method. The excess of tissue is removed as close down to the cartilages as possible. Hæmorrhage is free, but is easily checked. He dresses the raw surface with iodoform gauze, and keeps the granulations in order by the daily application of nitrate of silver. Even after these extensive operations recurrence sometimes takes place, but the operation not a dangerous one, and can be repeated.

Bronson[4] recommends more thorough treatment of the individual lesions. He says no surface application has much effect, and believes that the opening of each pustule, the extrusion of its contents, and the treatment of the cavity by an efficient disinfectant is the most successful method. He has most faith in **Tricresol**, but **Lysol** and **Creolin** are also useful. He makes the application with a toothpick, introducing it through each cavity. He speaks well of the exfoliative treatment, and says that **Resorcin,** 30 to 40 per cent. in gelanthum, is less unsightly than Unna's resorcin paste. Desquamation commences in from two to five days, and there is not too much inflammatory reaction. [If the resorcin is used at a less strength than 30 per cent., there is almost certain to be some reaction. It is the fact that its great concentration destroys the superficial layer of the epidermis that diminishes the risk of inflammation.] In the discussion which followed the reading of Bronson's paper there was a general consensus of opinion as to the value of interference in these cases.

REFERENCE.—[1] *Jour. des Pract.*, May 5, 1900; [2] *La Presse Méd.*, No. 8, 1901; [3] *Ibid*; [4] *Jour. Cut. Dis.*, Oct., 1901.

ACROMEGALY. (See "Pituitary Gland.")

ACTINOMYCOSIS. *Norman Walker, M.D.*

Barling[1] showed at a meeting of the Birmingham and Midland Counties Branch of the British Medical Association a young woman with this disease, affecting the left cheek and the side of the neck. There was no evidence of bone mischief. The fungus was found in the pus, but cultivation was not successful. The disease steadily improved under large doses of **Potassium Iodide.** [It should be noted that the doses requisite in such cases are larger than those generally given in other diseases, as much as 40 grains three times a day being necessary.—N. W.]

REFERENCE.—[1] *Brit. Med. Jour.*, Jan., 1901.

ACTINOMYCOSIS (Mammary). *Priestley Leech, M.D., F.R.C.S.*

This disease has been studied by M. St. Mileff[1] in his thesis (Lyon, Dec., 1900). He comes to the following conclusions: Mammary actinomycosis is a disease common to both man and animals, being very infrequent in the former and common in the latter. In animals infection occurs almost exclusively through the milk canals, as proved experimentally by Johne. In man two forms of mammary actinomycosis are distinguishable, *viz.*, primary and secondary. Primary mammary actinomycosis is due either to the propagation of actinomycosis grains in the milk ducts, or to the penetration of

these grains into the mammary tissues from a solution of continuity of the skin caused by traumatism or some other affection. The author has collected four cases of primary mammary actinomycosis. The secondary form is due to the extension of actinomycosis from some other part or organ, most generally the lung.

DIAGNOSIS.—Mammary actinomycosis is difficult to diagnose, and may simulate an interstitial mastitis, a mammary tuberculosis, cancer of the breast, or even a tertiary syphilitic lesion. If mammary actinomycosis is suspected, a microscopic examination of the pus or a piece of tissue is necessary, and this must be repeated if nothing is discovered at the first examination.

PROGNOSIS.—This is good in the primary form, but in the secondary it is much more serious, and even fatal when an important organ like the lung is attacked.

TREATMENT.—The only rational treatment is the surgical one. As soon as the diagnosis is established the diseased focus should be removed, and the suspected tissues scraped and cauterised until one is certain all the diseased tissue has been removed. Where surgical treatment cannot be applied methodically, the fistula should be scraped, painted with tincture of iodine and strong carbolic acid, and **Iodide of Potassium** given internally.

REFERENCE.—[1]*Gaz. des Hôp.*, Jan., 1901.

ADDISON'S DISEASE. (See also "Metabolism.")

R. Hutchison, M.D.

Thomson[1] has reported two cases of Addison's disease in which great benefit was derived from the administration of **Suprarenal Extract.** One of the cases has been under observation for four and the other for three years. The exact dose is not stated. Edel[2] reports another case in which the use of suprarenal tablets was followed by increase of strength and diminution of bronzing. The patient ultimately succumbed to tuberculous meningitis. McKenzie[3] has reported the case of a boy suffering from hæmophilia, in whose case obstinate epistaxis, which had resisted all other treatment, yielded at once to plugging with cotton-wool soaked in a solution of the extract.

REFERENCE.—[1]*Med. News*, Sept. 1, 1900, [2]*Münch. Med. Woch*, No. 52, 1900; [3]*Brit. Med. Jour.*, Apr. 27, 1901.

ADIPOSA DOLOROSA (A Myxœdematoid Dystrophy).

R. Hutchison, M.D.

Among the abortive forms of myxœdema, there is one which has already been sufficiently described by Dr. Dercum, of Philadelphia, to enable us at once to outline its general features, and to

which this observer has given the name of adiposa dolorosa. Judging from his observations, and also those of Henry, Spiller, Eshner, and Hay, the malady in question appears to affect exclusively persons of the female sex. It is generally met with in middle-aged or elderly people, though it has occasionally been observed comparatively early in life—in one case at the age of twenty-nine.

The pathogenesis of the affection is obscure. In some cases there has been a history of alcoholism, syphilis, or rheumatism, but in other cases these etiological features have been absent. In one instance the onset of the malady dated from a carriage accident, as the result of which the patient was pitched out on to the road, and remained for a time unconscious. In its fully-developed condition the disease is characterised, to begin with, by the presence of disseminated subcutaneous masses of fat, which vary considerably in size, and may attain considerable dimensions. They first appear in the form of small nodules which grow slowly, while other tumours of the same nature continue to make their appearance in other regions of the body. These local deposits of adipose tissue occur on the legs, thighs, arms, back and abdomen, and they never invade the face, hands, or feet, or the body as a whole, and never culminate n a general uniform obesity, always remaining separate and distinct, with a well-defined outline. More or less soft to the touch at the beginning, these fatty deposits ultimately acquire a firm consistency. They are often lobulated to an extreme degree, and on palpation give the sensation of a bundle of worms or rolls of cord, resembling in this respect the sensation given on palpating a varicocele. Microscopical examination of portions of these tumours showed simple hyperplasia of the adipose and connective tissues.

Another feature of these localised collections of fat is that they are associated with pain. This sometimes occurs spontaneously, at others only on pressure or on movement. In certain cases the pain has preceded the appearance of the fatty overgrowths, being felt at the spots where the latter make their appearance later on, but in some patients the painful manifestations did not supervene until the tumours had attained a certain size.

Lastly, paroxysms of acute pain have been noted as occurring coincidently with a sudden and rapid increase in size of the fatty masses. The thyroid gland in these patients often presents a marked degree of atrophy. Several other symptoms are occasionally observed, though less constant and of secondary importance, such as pain on pressure over nerve trunks at the root of the affected limbs, areas of hyperæsthesia and anæsthesia, a muscular and general

enfeeblement, diminution and even suppression of sweat secretion, headache, a tendency to hæmorrhage from the mucous surfaces, and bronchitis. The affection is essentially of a chronic nature. Its onset is insidious, and the disease runs a slow and uncertain course, culminating, it may be, sooner or later, in marasmus and dementia. Except at the terminal stage, in which the influence of senility must be allowed for, there is not, as a rule, any mental disturbance. At the *post mortem* examination of two women suffering from painful adiposis, the thyroid gland was hard and infiltrated with calcareous deposit.

Painful adiposis differs from ordinary obesity in that it is associated with a whole series of symptoms not met with in the latter. It, on the other hand, presents manifest points of resemblance with ordinary myxœdema, from which it differs, however, in the fact that the face, hands, and feet are not invaded, by the absence of mental disturbance and slowness of speech, as well as by the pain which is never absent in adiposa dolorosa. The myxœdematous nature of the condition is, however, hardly open to doubt if we consider its symptomatology, and the beneficial action of the **Thyroid Treatment.** Under its influence the fatty growths retrogress, the pain subsides, and all the other symptoms undergo parallel improvement. Methodical **Massage**, it is worth noting, has been found a very useful adjuvant of the thyroid treatment.

Reference.—*Med. Press and Circ.*, Feb. 8, 1899.

ALBUMINURIA. (See also "Bright's Disease" and "Albumosuria.")
Prof. Robert Saundby, M.D., LL.D., F.R.C.P.

Cyclical Albuminuria.—The condition which has been variously called intermittent or cyclical albuminuria, is perhaps best defined by the term orthostatic albuminuria, for in these patients, position is the factor which determines the appearance and disappearance of the albumin. However, the name cyclical albuminuria seems to have caught the popular fancy, and will probably endure in spite of its want of accuracy. It is, however, very desirable to restrict it to those cases where the albumin is found only after the patient has been going about in the erect position, and it is essential that this class of case should be distinguished clearly, as they are a very benign group about which a favourable prognosis may be confidently expressed. Undoubtedly in nephritis the albumin may be increased when the patient goes about, and may diminish when he lies down, but it never wholly disappears except in those cases where the nephritis is subsiding and the amount present is very slight. In

cyclical albuminuria, however, the amount of albuminuria presen during the day is considerable, that is to say, sufficient to cause a dense cloud on boiling, yet if the urine passed on rising in the morning be examined, it will when boiled remain absolutely clear. At a meeting of the Société Médicale des Hôpitaux Le Noir[1] related the particulars of twenty-four cases of this condition in patients varying from ten to thirty years of age, all of whom were thin, dyspeptic, and presented slight dilatation of the stomach with congestion of the liver and lowered arterial tension. In none of them was there any sign of nephritis apart from the albumin, and all recovered without complications. A point about these cases is that they show no diminution of the permeability of the kidney to methylene blue, as would be the case if nephritis were present. This was pointed out by Merklen and Méry in the course of the discussion which followed Le Noir's communication, each relating a case of albuminuria following infectious disease (mumps, scarlatina,) in which, although the albuminuria was orthostatic, the permeability of the kidneys was diminished. Dauchez[2] believes that these cases of cyclical albuminuria are specially related to the gouty diathesis, and gives a case to illustrate this relation in a girl aged thirteen. The patient, of undoubtedly gouty ancestry, arthritic, and diabetic, was very rapidly relieved by milk diet. The kidneys always remained permeable to methylene blue, and the patient was cured at the end of the tenth month, but she had an evening discharge of albumin every month. Dauchez believes that an infection or pregnancy will cause a return of the condition. In illustration of this form of albuminuria, Courcoux and Le Noir[3] have described the case of a young girl aged sixteen who had scarlatina at the age of seven, and who at puberty presented all the signs of nephritis, with albuminuria, anasarca, etc. Under the influence of milk diet the condition of the patient improved considerably; the headache and the œdema disappeared, but traces of albumin remained. While the morning urine never contained albumin, that of the day always showed a quantity, varying from 0·25 to 0·3 per cent., and it was observed that this diurnal albuminuria was exclusively dependent upon the erect position, that it was not increased during digestion, and that it was sufficient to keep the patient in bed in order to see it disappear. There was delayed elimination of methylene blue, so that the orthostatic albuminuria depended probably upon the persistence of slight change in the kidneys.

In a recent report presented to the second Congress of Insurance Medical Officers, held in Amsterdam, Prof. Stokvis[4] of Amsterdam,

considered that cyclical albuminuria does not afford grounds for rejecting candidates for life insurance. This rule is, we believe, generally recognised in this country, but care must be taken to establish the fact that the albuminuria is the sole symptom, by excluding all other signs of renal disease.

REFERENCES.—[1]*La Sem. Méd.*, 1901, p. 246; [2]*Jour. Sci. Méd. de Lille*, Oct. 6, 1900; [3]*La Sem. Méd.*, 1901, p. 350; [4]*Brit. Med. Jour.*, Oct. 12, 1901, p. 1009.

ALBUMOSURIA. *Prof. Robert Saundby, M.D., LL.D., F.R.C.P.*

Since Bence Jones, in 1848, recorded the presence of a new substance in the urine of a patient suffering from mollities ossium, albumosuria may be said to have been known; but little was understood about its nature or its relations, and a certain amount of confusion existed as to its exact reactions. According to T. R. Bradshaw,[1] the characteristic feature of the urine is the presence therein of a proteid which bears a superficial resemblance to albumin, but which differs from it in several of its reactions: (*a*,) It coagulates at a comparatively low temperature (60° C. = 140° F.); (*b*,) The coagulum is redissolved on boiling; (*c*,) It is readily precipitated by hydrochloric acid, as well as by nitric acid, and the precipitates are dissolved on boiling. In his opinion the precipitation with hydrochloric acid is the most satisfactory test for bedside use, as it requires no special apparatus, and if the urine is diluted well with water the reaction is quite distinctive. It should be applied by the contact method. Albumose has sometimes a tendency to separate out spontaneously on standing, so that the urine looks like milk. Albumosuria is generally associated with an invasion of the cancellous tissue of the bones of the trunk by a cellular growth, with disappearance of the osseous tissue, so that the bones become reduced to mere shells which break on the slightest pressure. The interior of the bone is occupied by a reddish gelatinous greasy pulp, which under the microscope consists of a vascular mass of cells, round or spindle-shaped. The whole structure resembles sarcoma, and the condition is generally known as "multiple myeloma." The disease seems to be always fatal, but in some cases is remarkably prolonged, and its progress may be arrested for longer or shorter periods. As a rule these cases seldom last for a year after the symptoms have become so severe as to lead them to seek advice. Death takes place from exhaustion, or from some intercurrent disease.

In a case reported by Kalischer,[2] albumin as well as albumose was found in the urine. Microscopical examination of the bone marrow showed it to consist for the most part of white corpuscles,

without any appearance of regular "tumour" growth. The condition was therefore one of lymphoid myeloma, and forms a bridge between the typical myelomatous tumours and such cases as that reported by Askanazy,[3] which presented the appearance of lymphatic leucocythæmia associated with albumosuria. The patient had swollen glands in the neck, axilla, thorax, and abdomen. The blood showed the characteristic alterations of lymphatic leucocythæmia, and the urine contained 1 per 1,000 of albumose, without any trace of albumin or sugar. At the autopsy, besides the glandular tumours observed during life, there was a lymphoid hyperplasia of the bone marrow, with slight swelling of the spleen and hypertrophy of the lymphoid follicles of the tongue. The bone marrow contained albumose, but this substance could not be discovered in the enlarged lymphatic glands.

These cases show that albumosuria must not be regarded as a pathognomonic sign of myeloma, but may be equally connected with the diffuse lymphoid alteration of the bone marrow, such as observed in lymphatic leucocythæmia.

REFERENCES.—[1]*Brit. Med. Jour.*, Nov. 3, 1901; [2]*Deut. Med. Woch.*, vol. xxvii, p. 54, 1901; [3]*Deut. Arch. f. klin. Med.*, vol. lxvii, p. 1-2.

ALOPECIA AREATA. *Norman Walker, M.D.*

Sabouraud's views as to the differentiation of this into two varieties have not met with much acceptance, but undoubtedly the belief in its infective nature is gaining ground.

Lassar,[1] who believes in the infective theory, advises a treatment which is sometimes brilliantly successful. The scalp is washed daily with a strong tar soap, then treated with 2 per cent. **Sublimate** solution, afterwards with ½ per cent. alcoholic solution of **Naphthol**, and lastly with 2 per cent. **Salicylic Acid** in oil.

Jacquet[2] has a further new suggestion to offer, namely, that alopecia areata is in some way connected with bad teeth.

Boschke[3] has repeated Giovanni's experiments with the **Acetate of Thallium**. He administered it to mice, sometimes by the mouth, sometimes subcutaneously. After prolonged administration of even very small doses the hair fell out in a manner suggestive of alopecia areata. In other cases the fall was more diffuse.

Scheffer[4] describes some improvement following on the injection of **Pilocarpine**, ½ per cent. in 1 per cent. sublimate solution.

Finsen's[5] treatment has been applied with success in a number of cases, especially where the areas were limited, when the skin was thin and atrophic, and when the areas had ceased to extend.

Jacquet recommends massage four or five times daily, the inunction of spirit or some oily substance for preference, and irritants may be added to this. If these fail, a trip to the mountains may be of service.

Brocq discusses[6] what is really becoming an important question, *viz.*, whether children with alopecia areata should be allowed to attend school. It seems to be the custom in France not to allow them. Brocq thinks this wrong, for, although he admits that it is infective, he considers the risks are extremely small. He thinks the children should be allowed to go to school provided that they are under treatment, that the affected parts are kept covered, that their hair is cut quite short, and *that their beards are shaved!* If a case is known to have infected another it should be excluded.

REFERENCES.—[1]*Derm. Zeit.*, Sept., 1900; [2]*La Presse Méd.*, No. 93, 1900; [3]*Berlin klin. Woch.*, No. 63, 1900; [4]*La Méd. Mod.*, May 19, 1900; [5]*Noiré, Brit. Jour. Derm.*, Oct., 1901; [6]*Jour. des Pract.*, No. 478, 1900.

AMBLYOPIA. *E. H. Holthouse, M.B., F.R.C.S.*

Toxic Amblyopia.—The possibility of blindness from the use of other drugs than alcohol and tobacco is one not to be overlooked. Excessive tea-drinking is one of the habits which may bring it about. R. Wallace Henry[1] has put on record another case of this in a man, aged fifty-seven, whose vision in the right eye had been reduced to $\frac{6}{24}$ and in the left to $\frac{6}{18}$, with a small central scotoma for red in each. The patient never used tobacco in any form, nor drank more than one pint of beer a day, but was "always drinking strong tea." After two months' discontinuance of the habit, and treatment with **Iodide of Potassium** and **Nux Vomica**, the vision was brought up to the normal standard.

The use of quinine also, as is well known, may produce the same effect. A. Alt[2] (St. Louis), reports a case of quinine blindness in a woman, aged twenty-seven years. She took 6 grains every two hours until 24 grains were taken, and then 4 grains every two hours up to a total of 40 grains. After taking 18 grains disturbance of vision commenced. After 28 grains she could barely recognize the lamp in her room. After 32 grains she was totally blind. In spite of this her physician next day ordered her to take 40 grains more. Light perception reappeared after three days, and two months later she had regained central vision of 20/30 and 20/20 partly; but her fields of vision remained very much contracted.

In many years' practice in a quinine consuming region, this is Alt's first case of unquestionable quinine blindness; but he thinks

some of the cases of optic atrophy he has previously observed might be of this character. He refers to a symptom not previously described in connection with quinine blindness which he himself experienced after taking 60 grains of the muriate in an hour. This is green vision, everything appearing of a bright emerald hue.

H. Moulton[3] (Fort Smith, Ark.) reports two cases coming to him as cases of optic atrophy of long standing, in which the cause had not been suspected ; but upon enquiry a reliable history was obtained of the origin of the trouble. It had followed taking very large doses of quinine in early childhood, after which the patient had for a time been completely blind.

Hysterical Blindness.—This condition, if not frequently met with, is one which it is important to recognize. There is, naturally, some difficulty in doing so. Arthur T. Muzzy[4] in reviewing the subject, calls attention to the opinions of other authors, and adds observations of his own. He finds the general statement that young girls are the most frequent victims, to be lacking in support, as few of the patients recorded were under the age of twenty years, and from this age to forty-five or fifty the numbers ran quite impartially. Cases were encountered among males, but only in about the same proportion that holds in hysteria in its more ordinary manifestations. The usual way in which this form of blindness first shows itself is by sudden occurrence on one side, and this may be complete at once. As the vision returns it may come at the centre of the field, or as a contracted field with a scotoma or blind section near the centre. A fact of help in diagnosis is the variation in vision at different times, whether it is tested by lenses or perimeters. In Dr. Muzzy's view the concentric contraction of the visual field is the most frequent of the forms in which hysteria affects the eye. The next in frequency is disturbance of the colour sense, achromatopsia and dyschromatopsia. There is sometimes a functional ptosis, and now and then paralysis or paresis of the recti muscles, especially the R. externus. The existence of anæsthesia of the cornea or conjunctiva is disputed. The prompt reaction of the pupil to light is important as indicating the absence of organic disease. But hysterical manifestations may come on in one suffering from specific disease, cerebral tumour, or other organic disturbance of the brain. The diagnosis here often becomes difficult, and can be only positively made after careful watching of the individual case. The author considers treatment in these cases very unsatisfactory. Apart from hypnosis or suggestive treatment he favours general measures, rest from over-work, nerve tonics, carefully adjusted exercise, and avoidance of unnecessary excitement.

In discussing the same subject D. M. Teszynsky[5] dwelt upon the importance of the pupillary reaction as a diagnostic sign. Many patients that he had seen with various forms of amblyopia all recovered, either through attention to their general health, through suggestion in various forms, or spontaneously.

REFERENCES.—[1]*Ophth. Rev.*, Dec., 1900; [2]*Amer. Jour. of Ophth.*, Jan., 1901; [3]*Ibid.*, Feb., 1901; [4]*New York Med. Jour.*, Sept. 16, 1899; [5]*Ibid.*

ANÆMIA. *T. N. Kelynack, M.D., M.R.C.P.*

"Anæmia" is a generic term, indicating a group symptom. Many different diseases in respect to their bloodlessness present a superficial resemblance. In most instances anæmia is to be regarded as merely indicative or symptomatic, it is only lack of knowledge that permits the survival of such terms as "primary" and "essential" anæmia. Doubtless all forms of anæmia will soon be recognized as secondary, and the term "anæmia" will then take its proper place as a mere symptomatic expression. For the present, custom and convenience still necessitate the perpetuation of a division into: (1,) Primary and (2,) Symptomatic. The so-called primary anæmias are dealt with elsewhere. (See "Chlorosis" and "Pernicious Anæmia").

J. G. Emanuel[1] conveniently summarises the chief blood changes met with in secondary or symptomatic anæmia.

(*a*,) *Mild cases.* (1,) Lack of hæmoglobin, *i.e.*, some red corpuscles are pale, and so the percentage of hæmoglobin is lowered.

(*b*,) *Moderate cases* are characterized in addition by: (2,) Poikilocytosis. The red corpuscles acquire an unusual shape; (3,) Loss of power to form rouleaux in fresh preparations; (4,) Polychromatophil degeneration, *i.e.*, the protoplasm of the red corpuscle stains a mixed colour instead of a uniform colour. It is a sign of degeneration leading to a coagulation necrosis of the protoplasm of the red corpuscle; (5,) Decrease in average diameter of red corpuscle.

(*c*,) In *Severe cases* we get in addition: (6,) Diminution in number of red corpuscles; (7,) Presence of normoblasts.

(*d*,) And in *Very Severe cases*: (8,) The additional presence of megaloblasts.

These changes occur in all anæmic blood, no matter what the cause. The changes are confined to the red cells. The white cells are unaffected as a rule, but very often in secondary anæmia there is an increase of white cells—a leucocytosis.

Average Blood-count in severe cases of Secondary Anæmia would be	R. B. Cps., 2,500,000 = 50 per cent. W. Cps., 8,000 or 11,500 { Lymphocytes dimished relatively. Poly. Neuts increased relatively. Hæmoglobin, 40 per cent.

In considering the therapeutics of anæmia it is essential, as Clifford Allbutt[2] has very rightly pointed out, to insist on the importance of recognizing the fact that such a name as anæmia is but indicative of a group symptom. The treatment of every case of anæmia must be preceded by a thorough clinical examination of the patient, and a careful investigation of the blood. (See "Blood, Examination of the.")

Much attention has recently been drawn to the advantages of the **Open-Air Treatment** in anæmic states. Much benefit may accrue from residence in judiciously selected climatic stations. (See "Chlorosis.") Even in pernicious anæmia the administration of oxygen has been thought to afford temporary relief. A perfected *motor-car* may perhaps prove a convenient means of providing pure air for anæmic cases.

If it is remembered that in anæmia the tissues are the seat of impaired nutritional processes, and that extensive morbid changes are often present in the cardiac muscle, the importance of **Rest** in the treatment of this class is at once evident. R. Wybauw[3] and others have rightly insisted on the importance of considering the condition of nutrition of the cardiac muscle in cases of anæmia and chlorosis.

As the result of clinical experience, **Arsenic** has long been considered a most valuable agent in the treatment of anæmic states. Ralph Stockman and E. D. W. Greig[4] in an experimental enquiry on the action of arsenic on the blood and bone marrow, arrive at the conclusion that in healthy animals arsenic does not increase the number of red or white corpuscles, nor the amount of hæmoglobin, but as regards its action as a hæmatinic in pernicious anæmia and other morbid conditions, the experiments point conclusively to a stimulation of the bone marrow. In these cases, however, although it may increase the number of the blood corpuscles, it does not seem to affect the real cause of the disease, and must therefore be considered as purely of use in the symptomatic method of treatment. (See "Arsenic, p. 10.")

Numerous articles have recently appeared on the use of **Cacodylic Acid** and its compounds[5] for clinical purposes, and especially in anæmic conditions. Many advise the subcutaneous administration of sodic cacodylate, others prefer to give it in the form of pills, in spite of the drawback from the garlic odour which may be imparted to the breath. Cacodylate of soda has especially been much lauded as a safe and beneficial form of administering arsenic in anæmic affections, but Murrell[6] has pointed out the dangers that may arise from

its unguarded use, and has wisely insisted on the necessity of considerable caution in the use of this agent. (See "Cacodylate of Sodium.") Gilbert and Lereboullet[7] suggest that for the purpose of subcutaneous injection **Iron Cacodylate** should be substituted for other iron compounds. The ferric cacodylate treatment is said to be particularly adapted for chlorosis, leucocythæmia, and cases which are suitable for treatment by arsenic.

In connection with the climatic treatment of anæmia, and the selection of suitable balneological resorts, the resources of the Tyrol must not be overlooked. The arsenious waters of Levico and Vetriolo are said to be most beneficial in their effects, and there can be no doubt that apart from any medicinal virtues of the waters, the climatic influence of such resorts is often excellent.

Iron of course still continues to hold a foremost place in the management of anæmic states, and with regard to the available preparations their name is legion. In the treatment of anæmia it is needful to insist on the well known fact that it is of the greatest importance to consider the state of the digestive functions before commencing the administration of iron. If with a coated tongue there is anorexia, flatulent dyspepsia, and evidences of chronic gastric catarrh, **Bismuth** and **Soda** with perhaps a little **Strychnine** and a mild vegetable **Tonic** should be given before commencing with iron. If there is constipation this should be met with appropriate measures. Then begin with the milder preparations of iron, and cautiously proceed. **Ammonio-Arsenio-Citrate of Iron** has been introduced as convenient for administration, either internally or by subcutaneous injection.[8] **Hæmoform, Ferratose**[9]**, Ferratin, Ferropyrin** and the like are much advertised preparations of iron, and according to some offer special advantages. H. Meggitt[10] has recorded good results from the use of Hommel's **Hæmatogen.** F. Bouillat[11] in his thesis on the employment of iron and different heavy metals in the treatment of anæmia, furnishes a useful bibliography, and shows that the action of these agents is due to stimulation of the blood-forming tissues. Cervello,[12] as the result of experiments on animals, shows that **Copper, Zinc, Manganese,** and **Mercury** act like iron in cases of anæmia

Preparations of **Red Bone-Marrow** have been used with somewhat varying results in the treatment of anæmia. J. S. Fowler[13] from experimental observations finds that: (1,) Subcutaneous injections of bone-marrow have no action on the red corpuscles or hæmoglobin of a healthy animal; (2,) When the red corpuscles and hæmoglobin fall below their normal limits, injections of marrow produce decided rise in both. This rise is well marked, sudden, and of short duration;

(3,) Along with the increase in the red corpuscles there is no corresponding improvement in the form of the cells ; (4,) The active principle is present in an aqueous, but not in an alcoholic extract of marrow, it is not precipitated by boiling, it does not contain iron, and may possibly be a deutero-proteose.

A. Haig[14] thinks cases of anæmia should be treated by the discontinuance of a uric acid diet. He considers the avoidance of tea, coffee, and cocoa as essential as abstinence from meat and beef-tea.

In connection with the recent view of Lloyd Jones, Lorrain Smith and others, it is interesting to find that Senator[15] has had good results from the establishment of **Diaphoresis** by means of hot baths, or hot-air baths given at home, when other measures had failed.

The toxic anæmias still continue to attract attention, especially those met with in tuberculosis, cancer, and many of the infectious fevers. Attention has also recently been attracted to the but little understood anæmias of infancy and childhood. Much further research is needed before anything like a satisfactory differentiation can be attempted. A. Macgregor[16] has described a so-called lymphatic anæmia in children. A good description of the anæmia infantum of von Taksch, with useful bibliography, is given by Ewing.[17]

REFERENCES.—[1]*Birm. Med. Rev.*, June, 1901 ; [2]*Jour. Baln. and Clin.*, April, 1901 ; [3]*Lancet*, Oct. 6, 1900 ; [4]*Lab. Reps. Roy. Coll. Phys. Edin.*, vol. vii, 1900 ; [5]See *E. Merck's Reports*, March, 1900 and 1901 ; [6]*Lancet*, Dec. 29, 1900 ; [7]*Rev. de Thérap.*, No. 16, 1900 ; [8]*Merck's Reports*, March, 1900 ; [9]*Year Book of Pharmacy*, 1900 ; [10]*Lancet*, Aug. 4, 1900 ; [11]*These, Paris*, No. 319, 1901 ; [12]*Jour. des Practiciens*, Jan. 12, 1901 ; [13]*Lab. Reps. Roy. Coll. Phys. Edin.*, vol. vii, 1900 ; [14]*Lancet*, March 16, 1901 ; [15]*Med. Press and Circ.*, June 20, 1900 ; [16]*Lancet*, Sept. 29, 1900 ; [17]*Clinical Pathology of the Blood*, 1901.

ANÆSTHESIA. *R. Hutchison, M.D.*

The *Lancet*[1] gives an account of a case of chloroform poisoning in Denmark treated by direct **Massage of the Heart** and inflation of the lungs (Prus's method), as yet but little known in this country. The case is described in detail by Freyberger.[2] The patient was a labourer, aged twenty-seven years, about to be operated upon for severe sciatica. He was presumably healthy. Chloroform was administered at 8 a.m. from an Esmarch's mask. Slight excitement was met with, but in fifteen minutes complete anæsthesia was established ; the pupils were contracted and the respiration was normal. However, when the incision over the sciatic nerve was made, struggling occurred. This seems to point to the fact that "complete" anæs-

thesia was not present. More chloroform was given, but as soon as a few inhalations had been taken "asphyxia" developed, and this was recovered from after the employment of tongue traction and artificial respiration. 4 drachms of chloroform had up to this point been given, and no more was subsequently used. The operation was proceeded with, but after a few minutes respiration again failed, and this time the measures for resuscitation were unsuccessful. Ten minutes having been spent in fruitless attempts, the trachea was opened and air was blown into the lungs through an indiarubber tube, also without effect. Prus's cardiac massage was then decided upon, and was carried out in the following manner. An incision was made in the skin and muscles obliquely, the flap having its base in the left mammary line, and its borders being parallel to the third and fifth ribs and left sternal edge. The third and fourth ribs were cut close to the sternum, and 2½ inches were resected in the flap. In doing this the left pleural cavity had been accidentally opened. The hand was then introduced, and the heart with the pericardium still intact was grasped. No heart movements were felt. Rhythmic compressions of the heart were systematically practised, partly by grasping the viscus, and partly by pressing it against the back of the sternum. After a short time slight spontaneous contractions were felt. The perflation of the lungs was maintained throughout. The spontaneous cardiac movements gradually increased, but no spontaneous respiration was initiated until half an hour after the artificial cardiac compression had been commenced. They were at first feeble and infrequent, and it was not until two and a half hours after the failure of respiration, that the patient was able to take more than ten consecutive respirations. At the end of three hours he was, however, breathing deeply and without effort. At this point both cardiac compression and artificial respiration were discontinued. He was absolutely unconscious and insensitive; all the wounds were sewn up and dressed without exciting any sign of consciousness or sense. Four hours from the commencement of the inhalation respiration became again difficult, and after a few minutes completely ceased. From this until death—that is, from mid-day until 8 p.m.—he drew not a single breath, but his heart continued to beat with sustained force for more than seven hours before its strength began to fail. The patient throughout all this period did not regain consciousness. The pupils did not react to light and were contracted. The radial pulse was imperceptible all the time, but there was visible venous pulsation in the neck. The necropsy revealed that the right lung had firm adhesions to the chest wall, while there was pneumo-

thorax on the left owing to the accidental wound in the pleura. It appears that the respiratory movements were at fault rather than any mechanical impediment to the ventilation of the lungs, so that the medullary centre appears to have been practically rendered *hors de combat* four hours after the chloroform had ceased to be inhaled, and never again to have reacted to the stimulus of perfused air which entered the lungs, and in spite of the fact that the heart was beating vigorously and automatically. It must be admitted that the case is one which defies explanation, while it affords hope that Prus's method may in suitable cases, and when resorted to earlier, restore life in cases of cardiac failure in chloroform toxæmia.

Ether versus Chloroform.—Luke,[3] while admitting the extreme value, and indeed indispensableness of chloroform as an anæsthetic, urges the advantages of ether in many operations. The evidence from the laboratory shows that ether exerts a much less paralysing influence upon the heart than chloroform. Death under chloroform is due in the majority of instances to syncope, which may arise from :

(1,) Reflex stimulation of the vagus, causing inhibition of the cardiac pulsations ; this occurs in light anæsthesia, due to insufficient chloroform.

(2,) Depressant action of the chloroform on the medullary centre of the heart, the vaso-motor centre, the intrinsic ganglia, and on the myocardium itself.

Death in this manner is due to overdose—of course, overdose is purely a relative term—in regard to which the personal equation must bulk very largely.

While death is most commonly due to failure of circulation, it may be due to cessation of respiration occurring in three separate ways :—

(1,) Direct obstruction from : (*a*,) Laryngeal stertor, due to spasm and approximation of aryepiglottidean folds ; (*b*,) Falling back of the tongue.

(2,) Direct retardation and arrest of the pulmonary circulation—first in the capillaries and later in the larger vessels—due to the direct local action of chloroform.

(3,) Interference with the respiratory centre in the medulla and the subordinate centres in the spinal cord.

With reference to the last, we must bear in mind that in chloroform we have a drug which acts by temporarily paralysing the nerve centres. The higher centres it is our object and desire to paralyse, but we only have to go a step further to produce a similar effect on those governing the vital processes.

The possibilities in the case of ether are much less numerous. Death may result from cessation of respiration due to :—

(1,) Direct obstruction from laryngeal spasm, falling back of the tongue, etc.

(2,) Spasmodic contraction of respiratory muscles. This is due to *overdose*, and is very unlikely to arise if the patient is carefully watched and cyanosis is avoided.

Syncope during the administration of ether is almost unknown, for the drug is a cardiac stimulant. The author advances hospital statistics to show that deaths under chloroform are far more frequent for the same number of administrations than is the case with ether. He then deals *seriatim* with the objections commonly urged against ether :—

(1,) If preceded, as it should be, by nitrous oxide, ether is *not* slow, the patient being usually fit for operation in about three minutes.

(2,) Bronchitis is a bugbear almost unknown when ether is given by modern methods.

(3,) The inflammability of ether is no disadvantage, unless the actual cautery is being used.

(4,) The administration of ether, though more difficult than that of chloroform, can easily be learnt in half a dozen lessons.

(5,) Severe sickness is really *less* common after ether than after chloroform. Ether sickness is due to the swallowing of mucus impregnated with ether and irritating the stomach. Chloroform vomiting is more severe, and due rather to central causes.

J. F. J. Silk[4] is of opinion that ether has suffered from the enthusiasm of its friends. Proper selection and variation of the anæsthetic is essential to full success in administration. He inclines to the opinion that there is less risk to the patient in proper administration of the A.C.E. mixture than in badly-given ether. It is often and truly objected that ether is "such beastly stuff," but the initial nastiness should be obviated by the preliminary administration of nitrous oxide or a little A.C.E. With regard to the disagreeable after-taste, much can be done in the way of lessening it by removing the gastric and buccal mucus and saliva as fast as they accumulate. "Always keep the head turned well to one side ; put the corner of a towel or a strip of gauze or wool in the dependent corner of the mouth ; if possible, let the patient be turned well over to the right side when put back to bed ; as soon as he is conscious, let him wash out his mouth and drink copiously of hot water." The plan adopted nowadays in etherisation is to charge the patient's blood fairly fully with ether at the outset, *i.e.*, at the most during ten or twelve minutes,

and afterwards to administer a very small quantity of ether, and allow plenty of air. Thus the natural colour is preserved during the greater part of the operation. After the initial stage, when a little cyanosis may be allowed, prolonged lividity is a sign of bad administration, or an indication for changing the anæsthetic.

REFERENCES.—[1]April 13, 1901 ; [2]*Treatment*, Jan., 1901, p. 785 ; [3]*Scot. Med. and Surg. Jour.*, March, 1901 ; [4]*Clin. Jour.*, Nov. 14. 1900.

ANÆSTHESIA BY COCAINE. *Priestley Leech, M.D., F.R.C.S.*

General Anæsthesia.—The method of general anæsthesia by **Injection** of **Cocaine** in lumbar sub-arachnoid space was mentioned in last year's *Medical Annual* (p. 118), and the technique followed by Tuffier was described. Since then this procedure has become much more common both on the continent and in America, but singularly enough there are few if any reports of its having been practised in England. The credit of first using cocaine in this manner belongs to Corning,[1] of Chicago, but Bier[2] and Seldowitsch[3] used it clinically, and to Tuffier belongs the credit of using it on an extended scale. The technique was described in last year's *Annual*, but some have recommended a somewhat different posture for the injection, the patient being in a sitting position with the body well bent forwards. The third lumbar interspace is the one generally chosen, but the fourth and second may be used, and Corning's first injection was made between the twelfth dorsal and the first lumbar vertebra. Hydrochlorate of eucaine may be sterilised in an autoclave or by heating the solution on three successive days to 100° C. Legueu[4] prefers eucaine on this account, as cocaine hydrochlorate can only be raised to a temperature of 80° C. without decomposition taking place.

Manega[5] has used this method in thirty cases, and has seen no bad results. The operations have lasted from half an hour to an hour and a half. Among the more serious operations were four laparotomies, two operations on the kidneys, and ten hernias ; the ages of the patients ranged from five to seventy-five years of age. In gynæcological operations the lack of muscular relaxation is apt to prove a hindrance. Legueu and Kinderdjy are opposed to this method for serious abdominal operations, on account of the mental shock.

All agree that the escape of cerebro-spinal fluid is *the sign* that the needle is in the space, and without this sign cocaine should not be injected, because it may fail to produce anæsthesia. Willy Meyer[6] recommends **Tropococaine Hydrochlorate** as a substitute for cocaine.

The two main points in its favour are, it is half as toxic, its depressing action upon the cardiac motor ganglia and on the cardiac muscle is much less, and recovery from its effects is much more rapid than is the case with cocaine hydrochloride: and its solution is far more stable. Reclus[7] says that lumbar injection of cocaine may fail because of a fault in the technic, the needle completely traversing the canal, or the needle becoming filled with blood, or the eye of the needle not reaching the canal. Again, analgesia may be incomplete or may not last sufficiently long to permit of an operation; he reports one case where the analgesia had disappeared in eleven minutes. Omitting the fleeting symptoms, Reclus records a case in which vomiting persisted four days, another in which paralysis of the anal sphincter lasted for seven days, another in which a paraplegia of the legs was found a month after the injection, and he reports eight deaths immediately following the sub-arachnoid injection out of a total number of 2,000, a mortality of two-fifths of 1 per cent. Ether, chloroform, and the local use of cocaine show no such high mortality figures as this. He concludes that the ordinary methods of anæsthesia cannot at the present time be replaced by this method, which is dangerous, obscure in its technic, and sometimes uncertain. Bier[8] has at present abandoned the method, pending further experiments on animals. Dumont[9] reviews the literature of the subject, and from his own experience thinks that at present it is unjustifiable. Delbet[10] says the same thing. Goïlav[11] has formed a very unfavourable opinion of this method from his own experience. He regards it as more dangerous than ether or chloroform; one patient died, and another, who recovered, was at "death's door" for about three days. Both patients were of advanced age and the subjects of marked senile degeneration. In these cases, and in cases of renal disease, he thinks this method is contra-indicated. He holds that intra-spinal injection of cocaine is only justifiable when the surgeon has to perform a serious operation in the country without assistance, and when a patient on whom an operation ought to be performed absolutely refuses to take chloroform or ether.

In France the method has been largely used, especially by Tuffier.[12] He thinks arterio-sclerosis is no contra-indication, but it should not be used in children nor in hysterical persons. In operations on the lower two-thirds of the thorax he thinks it the method *de choix*, but in intra-peritoneal operations he does not recommend it, because if the operator is not very skilled the nausea and vomiting may be very troublesome, although he, personally, has done very well with them. He has tried the method in 252 major operations, 142 of

which are classed as intra-peritoneal, including six gastro-enterotomies. Nausea is a frequent result. The most remarkable clinical phenomena observed in the post-operative period is a rise of temperature to 99°, 101°, or even to 103°.

In Belgium[13] the method is almost as popular as in France. At a discussion at the Société de Chirurgie the balance of opinion seemed to be that it was a method that would take its place alongside the other methods.

In America this method has also been used. Dr. Maurice H. Richardson[14] records his impressions of a visit made to Tuffier's clinique in Paris. He saw there two major abdominal operations under spinal cocainisation, one for the removal of two ovarian cysts, and the other for a large renal tumour, and the impression left on his mind by the ghastly and even alarming condition of the patients was distinctly unfavourable to this method of anæsthesia. The pulse was almost imperceptible, the face blanched, and the patient perfectly conscious, and repeatedly said she felt no pain. How much of this condition was due to the cocaine, and how much to the overwhelming mental impression, is uncertain; but from his description it would seem as if a large part was due to mental shock, which may have some permanent or lingering effect.

Matas[15] limits the indications for the use of the sub-arachnoid method as follows: (*a*,) To adults and reasonable persons who have good self-control, thereby excluding children, hysterical patients, and the insane; (*b*,) To patients in whom the methods of local or regional anæsthesia are inapplicable; (*c*,) To patients suffering from emphysema, advanced asthma, chronic bronchitis, and other respiratory affections, in whom a general inhalation anæsthesia is absolutely contra-indicated; in advanced cardiac cases with degenerative lesions he would fear the possible effects of the injection and excitement on the circulation; (*d*,) Where the painful part of the operation is not likely to be prolonged beyond an hour and a half; he would be averse to repeat the cocainisation or to increase the total dose of the cocaine to more than 2 centigrammes ($\frac{30}{100}$ of a grain), especially in exhausted subjects. Fowler[16] gives his experience in eighty-one cases where this method was used. He thinks it is free from any special risk, the greatest being that of septic complications following the puncture, and hence the necessity for very careful aseptic precautions. Time and the study of a large number of cases will define in the future the sphere of usefulness of this anæsthetic.

Rodman[17] says that substitutes, *e.g.*, eucaine, antipyrine, nirvanine, etc., have been used with only reasonably satisfactory results,

and have not given as good results as cocaine. He looks upon 30 minims of a 2 per cent. solution as the maximum dose, and half this as the usual dose (*i.e.*, about $\frac{1}{3}$ of a grain of cocaine). A small dose of a 2 per cent. solution is better than a larger dose in greater dilution. The primary and secondary effects of an injection of cocaine into the spinal canal are merely those of simple puncture exaggerated: (death has resulted from simple puncture). The fluid should be thrown in very slowly, at least a minute must be allowed, and the needle kept in position two minutes longer, and the solution must be injected warm. The composition of the needle is of importance. The best is made of iridium and platinum, 3 inches long, with a sharp point and a short bevel. The syringe should be made entirely of glass so that it can be boiled. The patient should be first blindfolded, and his ears filled with cotton to avoid psychic pain. The injection is best made in the sitting position, with the back well bent forwards, the exaggerated bicycle "scorching" position.

Chaput[18] reports favourably on this method, which he has practised in fifty-seven cases of major and minor operations. It is only inferior to general anæsthesia in the single disadvantage of the emotion and anxiety so often associated with its application. He has been impressed with the absence of shock and pulmonary complications. He thinks it is contra-indicated in nervous and timid patients, particularly women and children; also in operations demanding muscular relaxation (*e.g.*, fracture and dislocation), and in cases of prolonged and difficult laparotomy. In operations above the level of the xiphoid it is uncertain.

Local Anæsthesia in Ear, Nose and Throat.—Gray[19] again draws attention to the use of a solution of cocaine in aniline oil and rectified spirit. Aniline oil is simply aniline; it is almost colourless, but turns yellow or brown with time, and should be kept in a glass stoppered bottle and in a dark place. The original solution of 10 per cent. of hydrochlorate of cocaine in equal parts of aniline oil and rectified spirit answers very well for ear work, but something stronger was required for operations on deeper parts (removal of bony spurs from the nasal septum, etc.) To make a stronger solution and to avoid dangerous doses of cocaine, he mixed β-eucaine with the cocaine in the following manner: Two solutions were made, No. 1, a 20 per cent. solution of cocaine in rectified spirit, and No. 2, a 15 to 20 per cent. of eucaine in aniline oil. This second preparation is not a true solution, as eucaine is only soluble to the extent of about 10 per cent. in aniline oil. Before use No. 2 is well shaken up and 10 minims are added to 10 minims of No. 1, the mixture becoming clear in a few

~~PLATE II.~~

PLATE IA.

ILLUSTRATING AORTIC ANEURYSM.

Fig. A.

Normal Heart and Aorta viewed from the front

PLATE X

ILLUSTRATING AORTIC ANEURYSM.

Fig. B.

Chest viewed from the back.

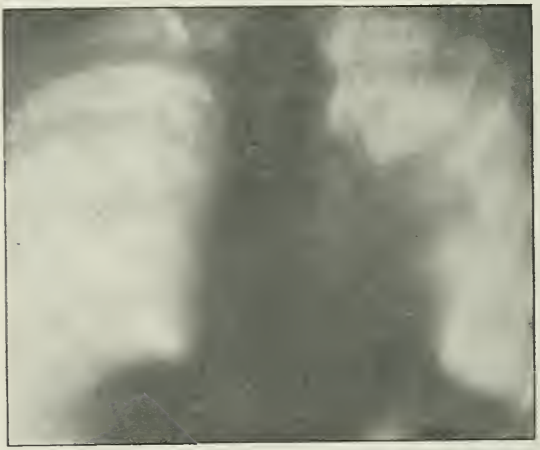


Fig. C.

Chest viewed from the front.

seconds. The formula of the mixed solution is as follows: Cocaine, 10; β-eucaine, 10; aniline oil, 50; and rectified spirit, 50 parts. It can be used in the ear by dropping some into the meatus or using gauze dipped in the solution, and pushing it down as far as wanted through a speculum.

This solution is quite strong enough for throat and nose work, but Gray never uses more than 20 minims of the mixed solution. The burning sensation soon goes off. It is applied by saturating a small pledget of cotton-wool at the end of a probe with a few minims of the solution and rubbing it on the part to be anæsthetised. After a period of at least seven minutes the anæsthesia will be found to be complete, much more so than that obtained by much larger quantities of stronger aqueous solutions of the anæsthetic. No poisonous effects have been seen by Gray, except that in some cases there has been a peculiar blue colour of the lips, which has passed away in a few hours.

REFERENCES.—[1]*New York Med. Jour.*, 1885, p. 483; [2]*Deut. Zeits. f. Chir.*, 1899, p. 361; [3]*Cent. f. Chir.*, 1899, p. 1110; [4]*Presse Méd.*, Oct. 27, 1900; [5]*Rif. Med.*, Oct. 11 and 12, 1900; [6]*New York Med. Jour.*, April 20, 1901; [7]*Ibid.*; [8]*Münch. Med. Woch.*, Sept. 4, 1900; [9]*Corr. f. schweiz. Aerzte*, Oct. 1, 1900; [10]*Jour. des Pract.*, Oct. 13, 1900; [11]*Bull. et Mém. de la Soc. de Chir. de Bucarest*, No. 5, 1900; [12]*Sem. Méd.*, No. 51, 1900; *Gaz. des Hôp.*, No. 15, Feb. 5, 1901, p. 137; [13]*Jour. de Chir.*, Nos. 3 and 4, 1901; [14]*Phil. Med. Jour.*, Jan. 19, 1901; *Boston Med. and Surg. Jour.*, Jan. 10, 1901; [15]*Phil. Med. Jour.*, Nov. 3, 1900; [16]*Ann. of Surg.*, Dec., 1900; *Med. News*, Jan. 5, 1901; [17]*Therap. Gaz.*, Feb. 15, 1901; [18]*Bull. et Mém. de la Soc. de Chir. de Paris*, April 30, 1901; [19]*Lancet*, March 9, 1901, p. 698.

ANEURYSM. *Prof. Alfred H. Carter, M.D., F.R.C.P.*

A most instructive paper by H. Walsham[1] on the diagnosis of aortic aneurysm by Röntgen rays gives precise rules for conducting the examination, and is admirably illustrated. He uses a very large coil capable of yielding a 12 inch spark. The tube, in a suitable holder, is placed 4 feet above the photographic plate (10 × 12), upon which the patient lies. The necessary exposure is three or four minutes only, and so short that all risk of injury to the skin is obviated. *Plate I, Fig. A* represents a skiagram of the normal heart and aorta viewed from the front. The shadow of the latter may be traced nearly up to the manubrium sterni, where it is lost. *Plate II, Fig. B* is an excellent skiagram of an aortic aneurysm, which shows well the greater density of the aneurysmal as compared with the cardiac shadow. *Fig. C* represents a skiagram of an aneurysm. There is a projecting shadow from the left base of the heart corresponding in position to the left auricle; and if aneurysms

of this chamber of the heart were not so extremely rare, we might suppose that it was a cardiac aneurysm. The tumour was seen to be plainly pulsating on the screen. The patient is still under observation.

Variations of the pulse in aneurysm are of common occurrence, and often of some diagnostic value. Thus there may be complete absence of one radial pulse, irregularity between the two radial pulses, sphygmographic differences on the two sides, or delay of the pulse at the wrist. Hay[2] records an interesting variation, which, however, must be of rare occurrence, namely, reversed paradoxic pulse. It is well known that under certain conditions, such as chronic mediastinitis, the pulse at the wrist may disappear (or nearly so) during inspiration, while normal during expiration. It is supposed to be due to fibrous adhesions between the sternum and the mediastinal structures, of such a kind that the inspiratory movement of the sternum drags upon them, and in so doing compresses the aorta and diminishes the blood-flow through it. In Hay's case a similar disappearance of the pulse of respiratory rhythm was noticed, but it occurred during expiration instead of inspiration. Further, it only affected the right radial, and only then in certain postures of the body. The *post-mortem* examination provided the explanation. The innominate artery was then seen to come off from the anterior face of a large aortic aneurysm, in such a way that when the sternum was depressed during expiration the vessel was squeezed between that bone and the aneurysm so as to stop its blood-flow.

Treatment.—It must be admitted that the treatment of thoracic aneurysm is not hopeful. A few cases recognised in the early stage and presenting favourable physical conditions may be benefited more or less by Tuffnel's method; but when large and well established, it far more often fails. For such cases it has been proposed to employ injections of **Gelatin.** A 2 per cent. solution is employed, which must be carefully sterilised. Three or four ounces of this solution should be injected at a temperature of about 38° C. into the subcutaneous tissue of the thigh or the flank every five or six days. After the injection the patient should be kept absolutely at rest. Futcher[3] has studied this method in nine cases, and he arrives at the conclusion that although in not a single instance has the aneurysm been cured, yet there is some merit in the treatment, and that it deserves a further trial.

A more effective treatment is that which is known as the Moore-Corradi method, consisting of the introduction into the sac of **Gold** or **Silver Alloy Wire** combined with **Electrolysis.** See under.

References.—[1]*Edin. Med. Jour.*, April, 1901; [2]*Lancet*, April 27, 1901; [3]*Jour. Amer. Med. Assoc.*, Jan. 27, 1900.

ANEURYSM (Surgical Treatment). *Priestley Leech, M.D., F.R.C.S.*

Two cases of **Ligature** of the abdominal aorta have been reported. Keen[1] records a case in which the patient died forty-eight days after operation. Necropsy showed that much oozing had taken place into the abdominal cavity in the neighbourhood of the ligatures, which had cut through. A summary of cases of ligature of the aorta (thirteen in all) is appended to Keen's paper.

Tillaux[2] reports a case of diffuse aneurysm of the left external iliac artery which was treated by laparotomy and proximal ligature. In this case the patient died on the thirty-ninth day after operation. At the necropsy it was found that the vessel which had been tied was the abdominal aorta, just above its bifurcation.

Bernheim[3] says that aneurysms may sometimes be cured by **Electrolysis** when all other methods have entirely failed. His method is to pass a fine wire through an insulated cannula into the aneurysmal sac, and then he connects the wire with the anodal pole of a battery. There are a dozen cases recorded as treated by this method, and he reports a case of a man, aged forty-five, with an aneurysm projecting to the right of the sternum, apparently from the ascending portion of the arch. At the first operation no less than 27 metres of fine gold wire were introduced, and a current varying from 10 to 80 milliampères kept up for about one hour. Two and a half months later a second operation was undertaken, when the sac had shrunk considerably, so that the needle had to be introduced twice as far as at the first sitting, in order to reach the cavity of the sac. Four months after the third electrolysis the patient seemed to be relieved of his aneurysm, and had returned to his occupation as a travelling agent.

Hunner[4] has a paper on treatment of aneurysm by a permanent wire and galvanism (the Moore-Corradi method). He questions whether we are justified in letting aortic aneurysms go on without operative interference. Ligature of the aorta has been universally fatal. Proximal pressure cannot be used in thoracic aneurysms, and is difficult to apply to abdominal aneurysms unless below the bifurcation of the aorta. Treatment by galvano-puncture or electrolysis is still used with more or less success, principally by Italians, as is also the method of Baccelli, who introduces several steel watch springs into the sac, and allows them to remain. MacEwen's method of needling is uncertain, and the treatment by **Gelatin** injections has not been successful in the wards of the Johns Hopkins Hospital. The method he thinks most useful is the Moore-Corradi method; injections of gelatin might be tried as a preliminary. The needles

he used were insulated by being covered with a black varnish or lacquer ; this cannot be boiled or soaked in carbolic, and he sterilised it in dry air by placing several needles in a test tube, corked with cotton-wool, and then placed the tube in a hot-air chamber and allowed it to remain there for one hour at 160° C. As regards the wire, the following principles are worth remembering : (1,) The disposition of the wire in the lumen of the sac is an important factor in the amount and effectiveness of the fibrin whipped out. A small quantity of fine wire possessing a good spring should be selected ; (2,) Cure of the aneurysm demands as complete contraction as possible of the sac wall upon the clot formed at or soon after the operation. The wire should be of such amount and material as not to interfere seriously with this contraction ; (3,) The corrosion of the wire by the electric current makes a rough surface, very conducive to the rapid whipping of the fibrin. Within limits the wire most easily corroded is to be preferred. Many valuable points regarding wires and needles, and a facility in their management, can be obtained by experimenting on a few glass flasks varying in capacity from 200 to 500 c.c., and stoppered with ordinary corks. The wire Hunner found to be most satisfactory was a silver alloy, 75 parts of copper to 1,000, highly drawn ; this wire when drawn from No. 8 to No. 27 (standard gauge) takes a closer coil than steel. The sac should never receive both poles, nor should the current be so passed that the negative electrode is in the sac. In thoracic aneurysm no general anæsthetic is needed ; locally, cocaine or ethyl chloride may be used. A list of fourteen cases treated by Moore's (the wire) method is given, along with another list of twenty-three cases treated by the Moore-Corradi method. Failure must be expected if an error in diagnosis be made and a fusiform sac be treated. Sepsis is an omnipresent danger, and all details of surgical cleanliness should be observed. One of the greatest dangers of this mode of treatment is the development and rupture of a secondary sac, due to rapid filling of the main sac by coagulum, and the shunting of the blood stream against a portion not receiving a special strain before. The wire may enter the aorta, but the chances of this are not great. Another danger is that of emboli breaking from the sac wall during or after the insertion of the wire. There is the danger of closing important vessels by the sudden filling with clot of an abdominal aneurysm. Litten has demonstrated that sudden closure of the superior mesenteric artery can have but one result, *viz.*, hæmorrhagic infarct from the lower end of the duodenum to the middle of the transverse colon.

Excision of Aneurysms.—Annandale[5] states that the **Excision** of aneurysms has the following advantages: (1,) If the operation is successful it is a complete cure; (2,) The ligatures have the advantage of being applied to the ends of the divided vessels and not to them in their continuity; (3,) Even if the corresponding vein be divided and a portion of it removed, the risk of gangrene is not great; (4,) In this method all the advantages of the antiseptic treatment can be obtained in connection with the successful healing of the wound and closure of the vessels where divided; (5,) Inflammation and suppuration of the sac or rupture of it cannot occur in connection with this method; (6,) Although more experience is required, it seems likely that certain aneurysms, such as subclavian, will in future be treated more successfully by this method. Annandale believes that the treatment of all aneurysms of the limbs, whether "spontaneous," "traumatic," or "arterio-venous," provided they be tolerably circumscribed and free from complication, will be most effectively carried out by excision; and that aneurysms of a diffuse nature, owing to rupture of the sac or other causes, will be best treated by laying open the sac and ligating the vessel at its point of communication, either by an incision through the walls of the sac, or by exposing and ligating the vessels immediately outside the sac. When possible, it is advisable to excise the sac or as much of it as can be safely dissected out; but if the sac is very adherent to the surrounding structures, it is best not to interfere with it, but to be content with securing the communicating vessels.

Arterio-venous Aneurysm.—Stimson[6] showed a case of arterio-venous aneurysm of the femoral artery from gunshot wound. He tied the femoral artery above and below the seat of communication between this vessel and the vein. The patient recovered. He thinks this operation preferable to the usual one of tying both the artery and vein and extirpating the sac; recurrence may possibly be more likely, but the danger of gangrene is diminished.

REFERENCES.—[1]*Amer. Jour. of Med. Sci.*, Sept., 1900; [2]*Bull. Mem. de la Soc. de Chir. de Paris*, May 8, 1900; *Gaz. des Hôp.*, No. 52, 1900, p. 527; [3]*Deut. Med. Woch.*, Aug. 23, 1900; [4]*Bull. of Johns Hopkins Hospital*, vol. xi, No. 116, Nov., 1900; [5]*Scot. Med. and Surg. Jour.*, Oct., 1900; [6]*Ann. Surg.*, June, 1900.

ANGEIOMATA AND CONGENITAL VASCULAR NEOPLASMS.

Priestley Leech, M.D., F.R.C.S.

E. Holländer[1] recommends **Cauterization with Hot Air** (*q.v.*) for angeiomata and other vascular growths of the skin, except in cases where the growth has invaded the mucous membrane. There are

fewer sittings in place of many painful applications of deep thermal puncture; there is no hæmorrhage, the scar tissue formed is scarcely visible in small areas, and the method is universally applicable.

REFERENCE.—[1]*New York Med. Jour.*, June, 1900.

ANTHRAX. *Priestley Leech, M.D., F.R.C.S.*

Nicolini Federici[1] draws the following conclusions as to the value of the **Carbolic Acid Treatment** and **Sclavo's Serum** against anthrax:

(1,) Sclavo's serum has a specific action against anthrax provided it is administered when the infection is not too far advanced.

(2,) It is innocuous, and does not produce any local or general reaction.

(3,) It has not been shown that the local process is benefited by the serum in any way different from the effect of the carbolic acid treatment.

(4,) The serum treatment is expensive, and not always accessible.

(5,) Hence carbolic acid may be used with advantage until serum becomes more accessible.

(6,) Carbolic acid injections, like those of the serum, may be made at a distance from the local process.

(7,) Neither serum therapy nor carbolic acid injection relieves the surgeon from the duty of attending to the residual scar.

Adolfo Liscia[2] reports two successful cases treated with Sclavo's serum. In both the improvement was rapid after a dose of from 2 to 10 drachms.

REFERENCES.—[1]*New York Med. Jour.*, Nov. 10, 1900; [2]*Gaz. deg. Osped. e del. Clin.*, 1900, p. 898; quoted in *Amer. Jour. of Med. Sci.*, March, 1901.

ANUS. (See also "Rectum.") *Herbert W. Allingham, F.R.C.S.*

Operation for providing a Sphincter.—Lemander describes[1] a plastic operation performed for substituting the levator ani and glutei muscles for the anal sphincter, which had been destroyed by a severe phlegmonous process. The patient required treatment on account of incontinence of fæces, and Lemander operated as follows: A cut was made in the middle line traversing the under half of sacrum and coccyx. From the point of this bone the incision was carried in a curve to either side, the convexity of the curve touching the tubera ischii. The two gluteal muscles were freed from the sacrum and from the sacro-ischiac ligament, and to a point corresponding to the upper half of this ligament these muscular flaps were still further freed by an incision, one inch and a half long, running from the sacrum in the direction of the muscular fibres.

The scar tissue, which was placed about the posterior portion of the rectum, was, together with the raphe of the anal perineum, dissected from the point of the coccyx. The levator ani and coccygeal muscles were then exposed, and were divided by a transverse cut reaching almost completely across the pelvis, yet so planned that the arcus tendineus of the levators was not too nearly approached, injury being thus avoided to the nerves which supply these muscles. The levator ani could not be separated from the coccygeus without dividing the inner layer of the pelvic fascia. The levators were drawn forward against the rectum, and secured in this position by four catgut sutures placed in the middle line. The defect in the pelvic diaphragm resulting from this transposition was then closed by drawing the two gluteal muscles, which had previously been dissected loose, forward as far as the anus, and fastening them in this position by stout catgut sutures; uniting them first to each other, then to the levator ani, and finally to the periosteum of the coccyx; two drainage tubes were inserted under the gluteal muscles. The anal aperture was kept closed by sutures during the operation. The wound suppurated freely. In spite of this the ultimate result was extremely good. The muscles were regularly exercised by means of the galvanic current, and by voluntary efforts on the part of the patient to retain enemata. The author believes that this method of operating may be serviceable in relieving the incontinence which frequently follows operation for cancer of the rectum.

Stretching Sphincters.—Herbert Allingham[2] points out the frequent importance of sphincter stretching in cases of constipation. In suitable cases it greatly assists and often absolutely cures the condition. It is particularly of use in cases of slight fissure with hypertrophy of the sphincters.

Pruritus.—Seebourg,[3] of Bremen, reports great success in obstinate cases after the use of subcutaneous injections of very dilute **Carbolic Acid**. Enough injection must be used to lift the skin. With regard to the same complaint, Tuttle says that the local treatment of pruritus ani is simply an adjuvant to general treatment. He believes the chief importance to lie in the confidence gained by the patient through the relief promptly afforded by local measures. Thus faithfulness in carrying out the long directions for general treatment is obtained. His formula for a local application is :—

℞	Acid Carbol.	℥ij	Sodii biborat.	℥j
	Acid Salicyl.	℥jss	Glycerin	℥j

This is to be used at bedtime, and during the night if necessary.

Methylene Blue, Camphophenique, Chloral Hydrate, and **Icthyol**,

are other remedies recommended. Tuttle believes most cases to have a general cause.

REFERENCES.—[1]*Cent. f. Chir.*, No. 25 ; [2]*Lancet*, Oct. 15 ; [3]*Cent. f. Gyn.*, June 27, 1901 ; [4]*Inter. Jour. of Surg.*, Aug., 1901.

ANUS (Artificial). *Priestley Leech, M.D., F.R.C.S.*

Konrad Büdinger[1] suggests the use of drainage tubing as a

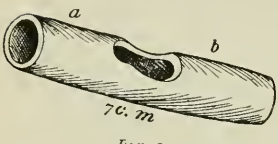


Fig. 1.

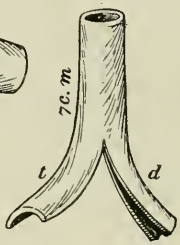


Fig. 2

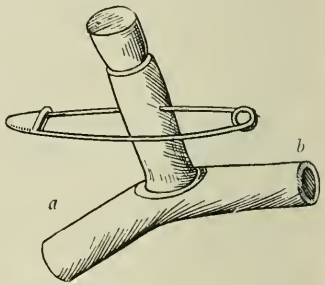


Fig. 3.

APPARATUS FOR ARTIFICIAL ANUS.

Figs. 1, 2, 3.—The two ends *a* and *b* are anointed with vaseline, and pressed together and introduced into the artificial anus. The ends *c* and *d* are introduced into the opening in tube *a b*.

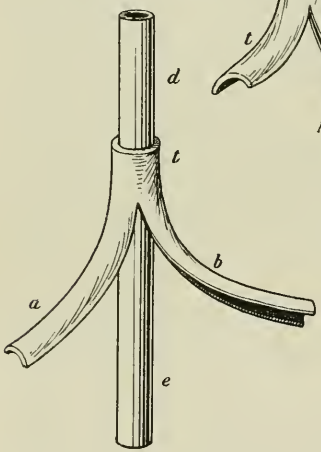


Fig. 4.

APPARATUS FOR FIXING CATHETER.

Fig. 4.—*d e*, catheter. The limbs *a* and *b* are fastened to penis with a little strapping.

simple and efficient means of closing an artificial anus and a means of fixing a catheter in the bladder. The cuts explain themselves.

REFERENCE.—[1]*Cent. f. Chir.*, No. 49, 1900.

APPENDIX (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Each year much is written on this subject, especially by surgeons. A great variety of conditions are met with, and the operations, when undertaken in time, are successful ; unfortunately, many are too late. Some surgeons are inclined to look upon any disturbance in the neighbourhood of the cæcum as one for surgical treatment. On the other hand, general practitioners and consulting physicians

control the issues of most cases, being first in charge. However, much less is now written from the purely medical side. A great number of cases recover under medical treatment, although catastrophies are being continually mentioned, young people dying who might perhaps have been saved by an early recourse to surgery. Perhaps surgeons, in fixing all their attention upon appendicitis proper and ignoring the rest, do not obtain the fullest confidence of non-operating practitioners, who mainly see the slighter cases of cæcal retention or typhlitis and perityphlitis--cases amenable to medical treatment, rest, low diet, aperients, and morphine.

Many medical writers (and the public follow suit) have taken to the name appendicitis as a designation for the whole subject. Hence, a great deal of the existing difference of opinion depends on a lack of definition, and it is a pity that the terms Cæcal Retention or Typhlitis Stercoralis, and Perityphlitis, are not properly employed for many of the slighter cases seen in general practice.[1]

Cæcal Retention.—The cæcum becomes distended, primarily as the result of some form of constipation, by doughy or fluid fæces, or gas, and therefore the distended cæcum can generally be made out, except when the patient has severe paroxysms of colic. The chief feature is the rapid and complete relief which follows an action of the bowels. After the attack has quite subsided, a thoroughly careful palpation should reveal no signs of an inflamed and thickened appendix.

Typhlitis stercoralis is a term objected to, since it is said that there is generally no evidence of inflammation in the wall of the cæcum itself. Such inflammatory alterations have, as a matter of fact, been many times met with, but, undoubtedly, the consequences of retention in the cæcum are more often perityphlitis.

Perityphlitis.—Local peritonitis around the cæcum has been fully described by Treves, but is ignored by many who follow the lead of American writers. It is presumably due to the toxins, not to organisms, derived from decomposition of retained contents within the cæcum. It generally gives rise to fibrinoplastic exudation and adhesions; less often it is a simple serous inflammation.[2] Its special sign is a marked tenderness in the right inguinal region, which persists, and only gradually disappears after the bowels have been fully relieved. But this tenderness should in the end completely disappear, so that after recovery there should be found no pain nor thickening when the appendix is firmly palpated. If, however, the appendix has become secondarily involved and kinked by the adhesions, tenderness and thickening are found. Therefore, both as regards retention in the cæcum and perityphlitis, the case is not to be considered as done

with until, after recovery from the attack, a careful examination has excluded any involvement of the appendix. Granted this, the practitioner stands on firm ground in stating that, the exciting causes of the foregoing attack, constipation, indigestible food, etc., being avoided, no recurrence of the attack need be anticipated, and, therefore, that there is no indication for surgical interference.

Appendicitis Proper.—Overwhelming evidence has been accumulated to show that once the appendix has been markedly inflamed, it remains in a chronic state of inflammation, liable to sudden recrudescence, so that the acute attack which supervenes is really a relapse rather than a recurrence. The chronic inflammation between the attacks is generally latent, but is made evident by palpation. It is the discovery of a painful or thickened and painful appendix which should mark the case as one for excision of the appendix, whilst the patient can be safely cured. It is absurd to advise the patient, the appendix having been found affected, to await another acute relapse with all its uncertainties. The diagnosis stands in no such need of confirmation. Further, there is now ample proof that appendicitis may be practically latent from the commencement, and continue so until a perforation takes place or an insidious abscess forms. In many cases no practitioner is consulted until these complications have set in; but this primary, persistent, latent appendicitis being fully recognised, the practitioner should not pass over the slight symptoms of "indigestion," aching in the cæcal region, loss of appetite, *malaise*, wasting, etc., especially in young people, without first making an examination as to the state of the appendix. It is hopeless to expect that appendicitis can be prevented. It primarily originates, apparently in slight anatomical variations, such as are common in vestigial structures, owing to which kinks, etc., prevent peristaltic movements from emptying its fæcal contents; or secondarily, follows such slight intestinal disturbances as cannot be avoided. Hence, everything turns upon excision after a correct diagnosis in order to anticipate the acute complications.

Suppurative Appendicitis.—In obscure cases it is generally agreed that the pulse-rate is the most trustworthy sign on the whole as to whether suppuration is commencing. If the pulse-rate falls below 100, allowing for the artificial slowing by opium, or by the bile acids when jaundice is present, medical treatment may generally be continued. A pulse-rate which rises after the bowels have been moved, to 100, then to 110 or more, and typhoid fever without perforation being excluded, generally indicates the need for an immediate surgical exploration. Importance has been recently attached to an examin-

ation of the blood, to Widal's reaction as a sign of typhoid fever, and to leucocytosis where suppuration or perforation has occurred, whether in the course of appendicitis or of typhoid fever. The white corpuscles have been found in numbers varying between 16,500 and 52,000 per 1 c.mm. where pus or perforative peritonitis has been met with at the operation.

As mentioned in last year's *Annual*, it is most important, when operating on acute cases, not to enter the general peritoneal cavity unless it is already involved. Anatomically, the appendix lies within the peritoneal cavity, but surgically the appendix comes to be shut off from this by adhesions, except in primary perforation.

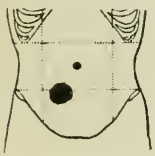
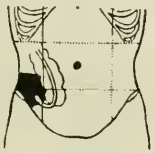


Fig. 5.



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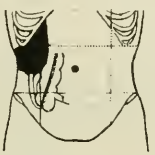

Fig. 7.

Fig. 8.

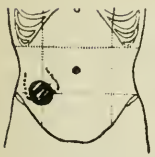

Fig. 9.

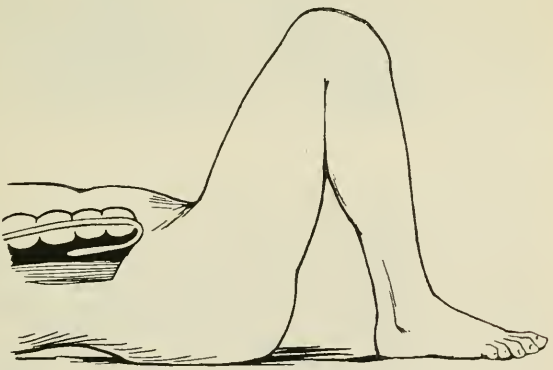

Fig. 10.

Morrison[3] gives diagrams of the position of the pus in suppurative cases. *Fig.* 5, inside the cæcum, the walls formed by omentum and intestine; *Fig.* 6, outside the cæcum, between it and the iliac crest, with extension up into the lumbar region (see *Fig.* 10, when the thigh is kept flexed); *Fig.* 7, when the appendix is long and reaches up behind the colon, so that the pus forms in the hepatic pouch; *Fig.* 8, when the appendix hangs over into the pelvis and the pus fills the recto-uterine or recto-vesical pouch and is roofed in by intestine or

omentum ; *Fig.* 9, the abscess is behind the cæcum, which lies more or less distended in front. The iliac incision should be adopted, and if extension is required it is carried back to the loin (see *Plate II*, *Fig. A*, and *Plate III*, *Fig. D*). This applies not only to extra-peritoneal suppuration, but also when the general peritoneal cavity is involved.

Richardson[4] thus saved three cases consecutively. There is ample room for all pus to be wiped out from the peritoneal cavity, then strips of gauze are packed in any pockets (see *Plate II*, *Fig. B*, and *Plate III*, *Fig. C*,) where fluid is likely to re-collect, or the wound is partly sewn up and the strips of gauze or tube brought out at the most dependent point in the loin (see *Plate III*, *Fig. D*).

Fowler[5] thinks that recovery is facilitated by raising the patient's head and trunk to make the fluid gravitate downwards. Against this must be set the danger of heart failure, which may require that the patient's head be kept low for a time and not raised on any excuse whatever.

Swain[6] gives a table of fifty consecutive cases seen by him. Among the fifty, ten died ; but of the forty who recovered, nineteen were cases of excision of the appendix in the interval, all of whom recovered. Excluding these from the fifty, there were among the thirty-one three which were not septic, one plastic, one catarrhal, and one tuberculous. The deaths occurred, then, among twenty-eight, which approaches the mortality of 40 per cent. mentioned by Treves. Among the eight cases of perforation, six died ; among the twenty suppurative cases, four died, three from peritonitis and one from cerebral thrombosis.

Excision of the Appendix.—Some adopt Doyen's modification. Warden[7] crushes the base of the appendix for about ¼ inch, so that the inner coats are actually cut through, whilst the peritoneal coat remains intact. The forceps are removed and a ligature tied round at the level crushed, then the appendix is seared off beyond the ligature with the cautery. This stump can be easily invaginated by sero-muscular sutures.

Cancer of Appendix.—These rare cases are referred to by Whipham.[8]

REFERENCES.—[1]*Edin. Med. Jour.*, Aug., 1901, p. 117 ; [2]*Lancet*, 1901, i, p. 781 ; [3]*Ibid.*, Feb. 23, 1901, i, p. 533 ; [4]*Ibid.*, 1901, vol. i, p. 851 ; [5]*Med. Rec.*, April 14, 1900 ; [6]*Westm. Hosp. Rep.* 1901, vol. xii, p. 49 ; [7]*Lancet*, Aug. 4, 1900, ii, p. 328 ; [8]*Ibid.*, Feb. 2, 1901, i, p. 319.

SUPPURATIVE APPENDICITIS.

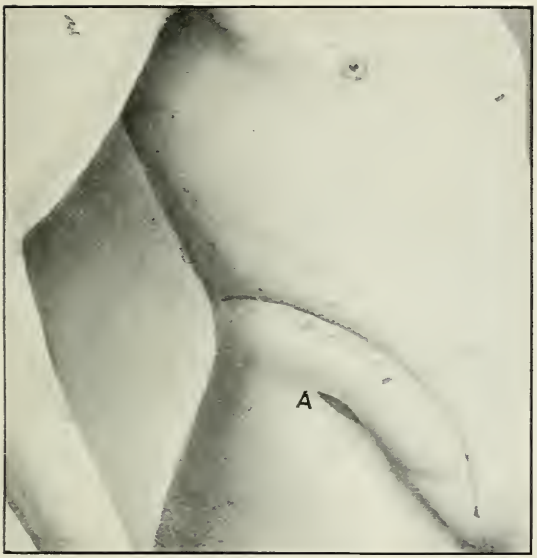

Fig. A.

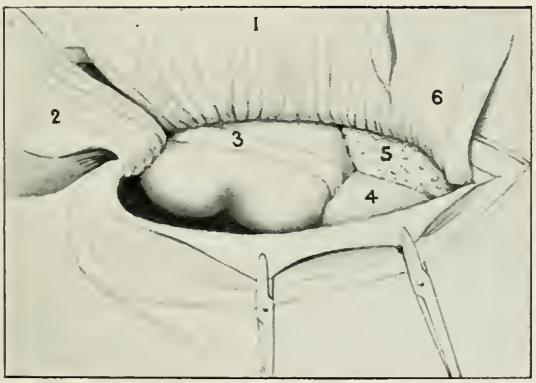

Fig. B.

PLATE III.

SUPPURATIVE APPENDICITIS.

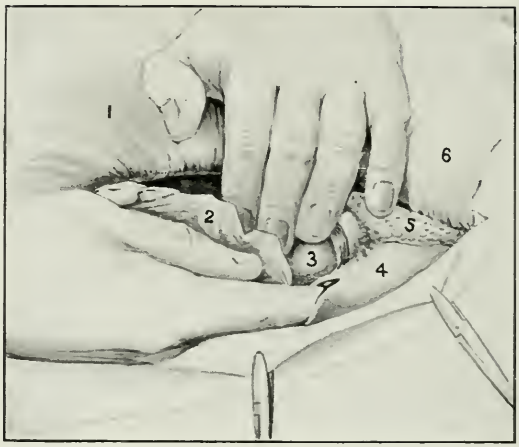

Fig. C.

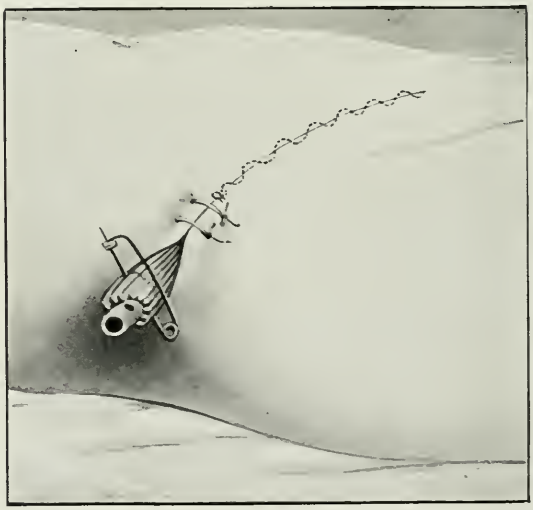

Fig. D.

ARSENICAL POISONING. *T. N. Kelynack, M.D., M.R.C.P.*

The epidemic of arsenical poisoning which, during the latter part of 1900, proved so disastrous in the Midlands and North of England, must be accorded classic rank amongst toxicological records. In the County Boroughs of Manchester and Salford alone it is estimated that at least 3,000 persons suffered. The history of the development, discovery, and results of the outbreak are now so well known that only a brief summary will here be necessary.[1]

The discovery of arsenic in the beer consumed by the affected cases[2] was quickly followed by the tracing of the poison to the brewing sugars, glucose and invert sugar, which had gained entry thereto from arsenicated sulphuric acid used in their production.[3]

The recognition of the true nature of the malady in Manchester and Salford was quickly followed by the publication of reports of similar, although generally less severe, outbreaks in a large number of towns and country districts. References to many of these will be found in Dr. Buchanan's report to the Local Government Board.[4]

Clinical Considerations.

The clinical investigation of the recent cases has afforded material for much discussion at many medical societies,[5] and the chief features have been well described by A. H. Bampton,[6] T. Lauder Brunton,[7] R. J. M. Buchanan,[8] R. D. Cran,[9] J. W. Crawshaw,[10] H. H. J. Hitchon,[11] N. Raw,[12] E. S. Reynolds,[13] W. B. Warrington,[14] and others.[15]

Stages and Varieties.—In many cases it was easy to recognise more or less distinct stages in the course of the illness: (*a*,) Muco-cutaneous irritation; (*b*,) Neuritis; and (*c*,) Paralysis with atrophy and deformities.

The distinctly neuritic cases could also be divided into three groups: (1,) Arsenical neuritis occurring in temperate persons; (2,) Arsenical neuritis in chronic alcoholics; (3,) Neuritis in chronic alcoholics without distinct clinical evidence of arsenical poisoning.

According to the predominance of certain features a rough clinical classification dependent upon type has been possible: (1,) The mixed or common neuritic type; (2,) The sensory; (3,) The erythromelalgic or vaso-motor; (4,) The paralytic; (5,) The ataxic; (6,) The atrophic; (7,) The pigmentary or Addisonian; (8,) The cutaneous forms other than pigmentary; and (9,) The catarrhal.

It was sometimes possible to discriminate readily between (*a*,) acute and (*b*,) chronic cases.

It is also well to bear in mind that while most cases presented

evidences of nervous involvement, in some few there were signs of arsenical poisoning unassociated with the customary neuritic manifestations.

General Characteristics.—The sufferers were almost invariably beer drinkers. Those who restricted themselves to spirits escaped. Members of the working class were most involved. Large numbers of cases were met with in workhouse hospitals. Both sexes suffered, but often the women most severely, and the greater number of fatal cases occurred in females. Persons of every age were affected, but the majority were middle-aged adults.

The patients usually sought advice on account of discomfort or pain, usually accompanied by weakness in the extremities, and particularly in the feet. Cutaneous lesions, rashes, eruptions and pigmentation sometimes formed the principal troubles. Many complained chiefly of catarrh. Some few were early affected with nausea, vomiting, and diarrhœa.

The *general aspect* of many of the affected cases was very characteristic. In the early stages the patient often had a dull, heavy, congested face, the eyes being suffused, watering, and with œdema of the lids (*Plate VI, Fig. A*).

The *gait and posture* were also generally typical. In some districts it was possible to recognise cases as they stood with dusky faces and congested, tearful eyes at their home-doors, or shuffled about the streets.

Cutaneous Affections.—Lesions of the skin were common, multiform, and varying greatly in distribution and extent.

Barendt, Brooke, Leslie Roberts and others have well described the general characters.[16]

Pigmentation formed one of the most striking features. The melanosis arsenicale, sometimes preceded by erythema, in many instances suggested Addison's disease. Sometimes the skin had merely a dirty tint, and often resembled a "vagabond's pigmentation," but not a few were as dark as mulattos. In many the nipples and areolæ were almost black. The pigmentation was also frequently very marked over the neck and shoulders, in the axillæ, groin, perineum, and about the genitals, across the lower part of the abdomen, and sometimes over pressure points. It varied much in extent, degree and distribution, being diffuse, punctate, or having a very characteristic "rain-drop" appearance (*Plate VII*).

In many cases the pigmented skin, especially over the abdomen, was shed in large flakes, in which arsenic could be readily detected (*Plate VIII, Fig. B*).

Fig. A.—Engorgement of the Conjunctiva and Œdema of the Lids, in acute stage of Arsenical Poisoning from Beer.

Fig. B.—Erythema, Keratosis, and Pigmentation, with thickened and brittle Nails from Arsenical Poisoning due to contaminated Beer.

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. L. Bradbury, del.)

PLATE VII.

E. L. Bradbury, del.)

Pigmentation of the Breast in Arsenical Poisoning from Beer.

Erythematous lesions were common. "Erythromelalgia" constituted a very striking and characteristic manifestation (*Plate VI, Fig. A*).

Hyperidrosis was frequently very marked. *Papular*, *vesicular*, *bullous*, and even *pustular* lesions were not uncommon. *Pruritus* was a troublesome symptom in many cases. *Herpes*, *urticaria*, and *psoriasis-like* lesions were also met with. Occasionally the affections closely resembled lichen planus and syphilides. Desquamation of the skin occurred in a large number of cases. Very exceptionally *hæmorrhagic lesions* occurred.

Keratosis, or thickening of the cuticle was present in a large number of patients. The degree of hyperkeratinization varied considerably; it was always most marked about the feet. Alterations in the nails were often seen; they became hard, thick, brittle, and were often shed (*Plate VI, Fig. B*). Changes also sometimes occurred in the hair, and in it arsenic was readily detected.

Nervous System.—The most detrimental effects of the arsenic were seen in connection with the nervous system.

Sensory disturbances usually appeared earliest, often lasted long, and, frequently, were very severe. Hyperæsthesia of the skin and muscles was commonly so severe as to cause the greatest distress. Hyperalgesia was common in the acute stages, while anæsthesia and, occasionally, analgesia occurred in more chronic cases. Neuralgic attacks were often met with. Paræsthesiæ, or abnormal sensations of different kinds, were common. The rate of sensory conduction was delayed in some, and derangement of muscle and temperature sense was common.

Motor impairment occurred to a greater or less extent in almost all severe cases. The degree of paresis and paralysis varied greatly. In some recovery occurred rapidly after the withdrawal of the arsenicated beer, but many were helpless for months.

The lower extremities generally suffered most. The general distribution was practically identical with that met with in so-called "alcoholic paralysis." In both upper and lower limbs the extensors usually suffered most. The small muscles of the hand were often affected. In severe cases the muscles of the back and even the diaphragm were involved. In neglected cases contractures occurred (*Plate VIII, Fig. B*). Tremors were occasionally seen. Painful tonic spasms, especially of the calf muscles, caused much distress in many cases.

Reflex Derangements.—In the early stages both superficial and deep reflexes were often exaggerated, but in chronic cases the knee-

jerk was generally absent. In some few there was slight disturbance of certain of the visceral reflexes.

Trophic manifestations have been common. The hyperidrosis, pruritus, and many of the cutaneous lesions are best considered as of tropho-neurotic origin. The trophic derangement of the hair and nails has already been noted. More or less general atrophy was present in not a few bad cases.

Electrical testing in severe cases has given the so-called "reaction of degeneration."

Psychical disturbances have been noted in some cases, but it was often difficult to distinguish between those arising from the action of the arsenic and those dependent on alcohol.

Respiratory Affections.—In the early stages catarrh of the nasal pharyngeal, laryngeal, tracheal, and bronchial mucous membrane was present. "Running of the nose" and "huskiness of the voice" were common complaints. The lungs have not usually appeared to be affected, except secondarily.

Active phthisis has been found in some of the fatal cases.[17]

Cardio-vascular Involvement.—Enfeeblement of the heart has been conspicuous in many cases. The chronic and excessive beer-drinkers have often presented well-marked evidences of "alcoholic heart." Cardiac asthenia proved fatal in not a few instances.

Anæmia was often very marked, and diminution in the amount of hæmoglobin, with slight leucocytosis, was noted in some cases.

Affection of Alimentary Canal.—Digestive disturbances have only been conspicuous in a certain number of the cases. In the early stages of those who were taking considerable quantities of arsenic, nausea, vomiting and diarrhœa were often experienced, but in not a few of even the severe forms no history of such symptoms could be elicited.

In some the appetite and sense of well-being had been particularly good before the onset of the illness.

Urinary and Genital Systems.—Urino-genital symptoms were generally slight. Occasionally there was vesical or urethral irritation. Cystitis and retention of urine occurred exceptionally. Arsenic was detected in the urine of a large number of the affected cases. In some there was complaint of irritation about the genitals. The arsenical poisoning did not apparently predispose to abortion, at least to any extent.

Reference in connection with the clinical manifestation of arsenical poisoning may be made to a useful communication on the uses and abuses of arsenic by H. D. Rolleston,[18] and G. Brouardel's recent essay should also be consulted.[19]

PLATE VIII.

ARSENICAL POISONING.

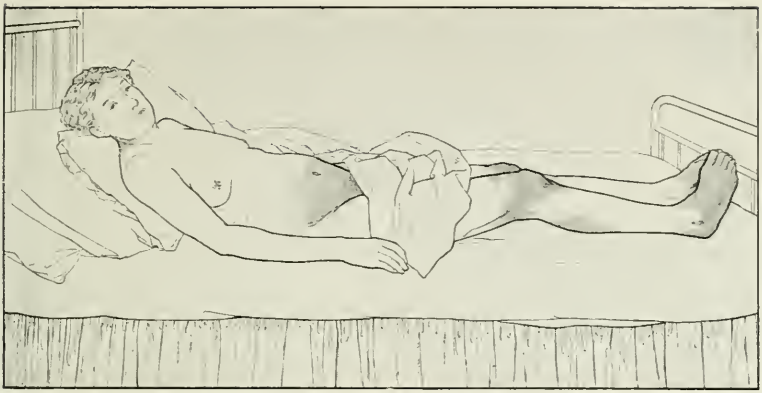

Fig. A.

Extensive peripheral neuritis from the drinking of arsenicated beer. Paralysis of hands and feet. Well marked "dropped" feet. Pigmentation about abdomen, knees, and feet.

Fig. B.

Peripheral neuritis from arsenic in an alcoholic subject. Advanced paralysis of both upper and lower extremities. "Dropped" hands and feet. Contractures of lower limbs. Desquamation of pigmented cuticle over abdomen. Drawing from case which ended fatally.

Special Cases.—Among the cases met with, special reference may be made to :—

(1,) *Cases occurring in sucklings.*—In at least two cases the infants of affected mothers have presented evidences of arsenical poisoning. J. H. Taylor has recorded a striking case.[20]

(2,) *Cases in children* have been exceptional, but J. Brown has described an undoubted case in a girl two years of age.[21]

(3,) Arsenical poisoning has also occurred from toffee made with contaminated glucose obtained from a brewery.

Dosage.—In considering the important but very difficult question of dosage it is necessary to insist that no fair comparison can be made between effects following the introduction into the system of arsenic in the cases under consideration and those arising from medicinal administration.

The action of the arsenic appears to have been considerably modified by concomitant conditions. The peculiar circumstances of its introduction seem to have led to an increase in the rate of absorption, to exceptional accumulation, and to a retardation in elimination. There is also reason for believing that the alcohol or other ingredients of the alcoholic beverages taken have in many instances greatly accentuated the effects of the arsenic. It must be remembered that there have been many cases where patients have only consumed very moderate quantities of beer or stout, and yet suffered severely.

The quantity of arsenic found in the different specimens of beer brewed from contaminated glucose has generally varied from 1 to $\frac{1}{10}$ of a grain per gallon, although it has been as high as $1\frac{1}{2}$ grains per gallon, and in one sample as much as 3 grains per gallon were said to have been found.

The amount of the arsenic in the incriminated glucose has been variously estimated as from ·01 to ·1 per cent., or 1 grain to over 9 grains per lb.

The invert sugar contained ·02 to ·06 per cent., or from about 1 grain to over 3 grains per lb.

The amount of arsenic in the sulphuric acid used in the preparation of the glucose and invert sugar has been estimated at from 1·5 per cent. to 2·6 per cent. of arsenious oxide.

Not only has the amount of arsenic in the sulphuric acid and brewing sugars shown much variation, but the proportion of glucose and invert sugar employed by different brewers has varied greatly. The amount of arsenic present in the beers brewed from the arsenicated sugars has therefore varied very widely. It is necessary also to remember, as is shown in the first Report of the Royal Commission,

that " Not only did the proportion of these sugars used in different brews vary greatly, but there is further material difference due to the stage at which the sugar was introduced into the beer. The evidence goes to show that in the process of brewing a portion of the arsenic contained in arsenical brewing sugar added before fermentation will be removed by the action of yeast, and possibly also in other ways ; whereas if arsenical sugars are introduced as ' priming ' after the beer has left the fermenting vessels, the whole of the arsenic present in the ' priming ' solution will apparently remain in the beer."

The arsenic present in the beers having varied within such wide limits, it has been almost impossible to ascertain the exact amount taken by any patient. For instance, if a patient drank a beer which contained ·14 grain per gallon and took half a pint of this, that would mean only taking $\frac{1}{160}$ of a grain of arsenic at a time. Many sufferers, however, took quite a gallon of beer daily, and that would be something like $\frac{1}{6}$ of a grain of arsenic daily. Some cases, however, have been met with taking the beer from a brewer who was using 50 per cent. of contaminated glucose, and here the dosage was equal to 1·4 grains per gallon.

It is also necessary to point out that much uncertainty has arisen in the exact estimation of the quantities of arsenic taken, because different analysts have employed different methods, which not unfrequently have given very divergent results.

There is reason to believe that the amount of arsenic present was often greater than was generally stated.

Diagnosis.—Many erroneous diagnoses had been made before arsenic was detected in the beer. Most of the cases were at first considered to be alcoholic neuritis. Attempts were made to show that some of the cases were examples of beri-beri.[22] A large number sought relief from their cutaneous lesions at skin hospitals. Scarlet fever and measles were also thought of. Some few patients with conjunctival irritation went to the eye hospitals. A few of the pigmentary forms were certified as Addison's disease. Some cases with pain and erythema of the feet were simply designated erythromelalgia. Other cases for a time were confounded with locomotor ataxia, Landry's paralysis, progressive muscular atrophy, and with rheumatism.

It is well to remember that in all doubtful cases the hair and urine should be carefully examined for arsenic, and, if possible, the nails, thickened cuticle, and desquamated skin.

Prognosis.—The greatest variety of involvement has been met with. Where the symptoms have been slight, recovery has usually

speedily followed removal of the irritant. In many cases after months of severe paralysis slow improvement has occurred. A large number of cases have ended fatally from cardiac failure, paralysis of the diaphragm or other vital centres, exhaustion, and secondary affections. Pulmonary tuberculosis has been present in not a few. The cases occurring in alcoholics have usually been much more severe than those met with in strictly moderate drinkers. In the latter, even when the paralysis has been most extensive, recovery has generally occurred, and often fairly rapidly.

TREATMENT.—It is hardly necessary to dwell upon the methods found to be most successful in the management of these cases. Judson Bury[23] has well indicated the more important points.

It is necessary, however, to point out that in all cases the administration of alcohol in all its forms should be immediately stopped. There seems to be a consensus of opinion that alcohol has in many instances greatly accentuated the action of the arsenic.

It may be well also to point out that since these cases appear peculiarly prone to pulmonary tuberculosis, measures should be taken to avoid all opportunities of infection.[24]

CHEMICAL FEATURES.

The chemical aspects of the subject, extremely important as they are, form matter for discussion by chemists, analysts, and manufacturers rather than by medical men. They have, however, received much attention by the Royal Commission on Arsenical Poisoning,[25] members of chemical bodies, especially the Society of Chemical Industry,[26] and persons interested in brewing.[27]

While the recent outbreak was mainly due to arsenical contamination of the brewing sugars supplied by one firm, recent investigations have clearly shown that arsenic may gain access to beer by the malt contaminated by fuel used in the process of malting, and possibly by other chemical substances used in brewing. Hops have generally been found free from arsenic, but it is desirable that all danger of contamination from fuel be avoided.

Great differences of opinion exist as to the most satisfactory and efficient test for the detection of small quantities of arsenic in beer.

W. Kirkby has adapted Gutzeit's test for the detection of arsenic in beer, and designed suitable apparatus for its employment.[28] For particulars see under "New Inventions."

J. A. Wanklyn considers that in the detection of arsenic in beer the possibility of its being present in organo-metallic compounds should not be overlooked.[29]

S. Delépine[30] has employed Reinsch's process in a manner very similar to the form recommended by the Committee of the National Health Society, and fully described by Luff.[31]

For administrative purposes it is desirable that a standard test should be adopted which shall conveniently indicate the necessary degree of freedom from arsenic.

Toxicological Aspects.

Recent investigations have gone far to amplify and modify much of our knowledge respecting the toxicology of arsenic.

Its presence in cutaneous structures and its ready elimination by the urine are points of considerable diagnostic value.

It would also seem that arsenic may act as a cumulative poison, and its elimination certainly may occur more slowly than was formerly thought.

Public Health Aspects.

The danger of arsenical poisoning through the contamination of beverages and food products has been startlingly indicated by recent experience. For details concerning the public health aspects of the recent outbreak the reports issued by the health authorities in the affected districts should be consulted.[32]

W. R. Smith and E. Russell have also considered the hygienic bearings of the subject.[33]

E. S. Reynolds[34] has collected particulars concerning some former epidemics of arsenical poisoning.

Now that it has been clearly demonstrated that hitherto the analysis of our beverages and food products has in only too many instances been greatly neglected by the authorities responsible for the care of the public health, and that improvement is much needed in respect to the machinery for effective administrative measures, it may be hoped that satisfactory steps will be speedily taken to safeguard the public.

The etiological relationship of arsenic to the lesions met with in the recent outbreak has been fully proved.

It would also seem very probable that much of the so-called alcoholic paralysis which has so long been prevalent in Manchester and district, and has been the subject of much careful study by Dreschfeld,[35] Ross,[36] and Bury,[37] has been due to the presence of arsenic, although in much smaller quantities than in the beer taken by sufferers in the recent outbreak.[38] This has been clearly recognised by the members of the Royal Commission[39] :—

"We have been informed by certain physicians in Manchester and

Salford that from their local experience of alcoholic peripheral neuritis they had before the 1900 epidemic come to regard this disease as essentially one which affected beer drinkers. In this connection, too, the evidence suggests that in Manchester and Salford, for some years before 1900, alcoholic peripheral neuritis has been more common than in large towns in other parts of the country where, so far as is known, excessive drinking is no less common than in Manchester.

"Although the liability of beer to contain arsenic was not recognised before the epidemic, we cannot doubt that beer, other than that brewed with the contaminated Bostock's brewing sugars of 1900, has in the past contained arsenic.

"Since the epidemic arsenic has been estimated, occasionally in quantities such as $\frac{1}{10}$ grain per gallon, and frequently in smaller amounts such as $\frac{1}{50}$ to $\frac{1}{100}$ grain, in the case of beers coming from certain breweries where Bostock's ingredients had not been used."

Regarding the exact pathology of many of the morbid states above mentioned, much still remains for investigation.

Dixon Mann[40] holds that the keratin tissues possess a marked affinity for arsenic, and suggests that the neuro-keratin of the nervous tissues was specially involved. He also thinks it probable that arsenic acted on the nervous elements by inhibiting the cells from taking up oxygen.

Although much of the nervous manifestations has been considered as peripheral, it seems clear that arsenic exerts a marked influence on the nerve cells, and in some of the affected cases spinal and cerebral involvement occurred.

The cardiac enfeeblement present in so many cases seems to have been due, in great measure, to the direct action of the arsenic on the muscle cells.

It is also possible that in the development of the so-called "alcoholic hearts," which have long been common in Manchester and district, arsenic may have played a part.[41]

F. W. Tunnicliffe and O. Rosenheim[42] have suggested that selenium has exerted a toxic influence in the recent outbreak, but of this there is no clear evidence.

Conclusions.

Although the effects of the recent outbreak have been disastrous to a large section of the community, the sad experience has afforded much new light on many medical and chemical problems, which must ultimately be of the greatest service to mankind.

The special dangers in connection with the use of certain forms of alcoholic drinks are now shown to be very real; new light has been thrown on the pathology of several so-called alcoholic affections; knowledge as to the toxicology of arsenic has been extended; and the necessity has been demonstrated for carefully safeguarding all processes concerned in the manufacture of beverages and the preparation of food products.

REFERENCES.—[1]*Report* of Royal Com. on Ars. Poisoning; also *Ars. Poisoning in Beer Drinkers*, by T. N. Kelynack and W. Kirkby, London, 1901; [2]Reynolds, *Brit. Med. Jour.*, Nov. 24, 1900; [3]Kelynack and Kirkby; *Med. Press. and Cir.*, Nov. 28, Dec. 12, 1900, *Lancet*, Dec. 12, 1900; [4]Buchanan, *Report* to Loc. Gov. Brd. on recent epidemic of Ars. Poisoning, London, 1901; [5]*Med. Chir. Trans.*, 1901; *Lancet*, Jan. 5, and Aug. 10, 1901; *Brit. Med. Jour.*, Jan. 12, and Feb. 16, 1901; *Liverpool Med. Chir. Jour.*, March, 1901; [6]*Quar. Med. Jour.*, May, 1901; [7]*Lancet*, May 4, 1901; [8]*Ibid.*, Jan. 19, 1901; [9]*Brit. Med. Jour.*, Dec. 8, 1900; [10]*Med. Press and Circ.*, Dec. 5, 1900; [11]*Ibid*; [12]*Ibid.*, Dec. 12, 1900; [13]*Lancet*, Jan. 19, 1901; [14]*Brit. Med. Jour.*, Jan. 5, 1901; [15]*Brit. Med. Jour.*, *Lancet*, *Med. Press and Circ.*, Dec. 1900 to Jan. 1901; [16]*Brit. Jour. of Derm.*, April, 1901; [17]*Edin. Med. Jour.*, Sept., 1901; [18]*Treatment*, April, 1901; [19]*Arch. Gen. de Med.*, 1900, p. 614; [20]*Med. Press and Circ.*, Dec. 5, 1900; [21]*Brit. Med. Jour.*, Dec. 8, 1900; [22]*Ibid.*, Dec. 1, 1900; *Lancet*, Dec. 8, 1900; [23]*Brit. Med. Jour.*, Dec. 8, 1900; [24]*Trans. Brit. Congress on Tuberculosis*, 1901; [25]First *Report* of Royal Com. on Ars. Poisoning, July, 1901; [26]*Detection and Determination of Arsenic*, London, 1901; [27]See Technical papers devoted to brewing; [28]*Ars. Poisoning in Beer Drinkers*, London, 1901, and *Pharm. Jour.*, 1901; [29]*Arsenic*, London, 1901; [30]*Brit. Med. Jour.*, Jan. 12, 1901; [31]*Text-book for Med. and Tox.*, 1895, vol. i; [32]*Reports* of Med. Officers for Cheshire, Lancashire, Shropshire, Staffordshire, Bacup, Blackburn, Crewe, Heywood, Liverpool, Manchester, Salford, &c.; [33]*Jour. State Med.* 1901, vol. ix, p. 29; [34]*Med. Chron.*, April, 1901; [35]*Brain*, 1884-5 and 1885-6; [36]*Med. Chron.*, 1889-90; [37]*Allbutt's Syst. Med.*, vol. vi, 1899; [38]*Med. Mag.*, July, 1901; *Lancet*, Aug. 10, 1901; and *Proc. Jour. Inebriety*, Sept., 1901; [39]First *Report of* Royal Com. Ars. Poisoning, 1901; [40]*Brit. Med. Jour.*, Aug. 10, 1901; [41]Graham Steell, *Med. Chron.*, 1891-2 and 1893; [42]*Lancet*, Feb. 2, 9, and March 30, 1901.

ARTERIES (Suture of). *Priestley Leech, M.D., F.R.C.S.*

Doerfler[1] reports two successful cases of suture of arteries performed by Barré. In one case a continuous silk suture, embracing adventitia and media, was applied laterally to the internal carotid, injured in the course of the extirpation of carcinomatous glands. The second case was one of traumatic aneurysm of the brachial, in

which four interrupted sutures penetrating the intima were applied to the wound of the brachial, embracing half of the anterior circumference of the vessel. Primary union occurred with diminished pulsation in the radial and ulnar of the injured side, a distinct pulsaton being visible below the site of puncture. Experimentally, the author has determined that an aseptic thread jutting into the lumen does not cause any interference with the patency of the vessel, and he therefore sees no danger in having the suture penetrate all the coats of the vessel. Any oozing from the needle punctures not controllable by pressure can be mastered by suture of the vessel sheath, or by covering it with an adjoining slip of muscle or fascia. Wounds of greater extent than half the circumference call for the Murphy invagination method. Indications for suture are: Accidental wounds, stab, gunshot or lacerated wounds; injuries inflicted during operation; traumatic aneurysms. Rigid asepsis is a *sine quâ non*, therefore an infected wound offers no field for this procedure. Interfere with the sheath of the vessel as little as possible, and subject the vessel itself to as little stretching as possible. To render the vessel free from blood, proximal and distal pressure by the fingers is to be preferred; if this fails or cannot be applied, strips of gauze or forceps covered with rubber have to be used.

Veau[2] mentions fifteen cases of suture of arteries in the human subject. Whether ligature of an artery will be finally displaced by suture is somewhat doubtful, but if the ligature of the common carotid continues to have the same mortality (37 per cent.), the suture of this vessel will be absolutely indicated in case of a wound. Suture of arteries has been employed in the following cases:—

(1,) In surgical wounds of arteries; this is the most favourable condition.

(2,) In traumatic wounds; lateral suture if the wound is smaller than two-thirds of the circumference of the vessel; otherwise suture by invagination.

(3,) In arterio-venous aneurysms; the arterial and venous orifices are sewn; it may be exceedingly difficult to do the latter.

(4,) Ssabanejew did an arteriotomy in order to extract an embolus.

(5,) Kümmel resected and sutured an artery invaded by a malignant growth.

Seggel[3] gives notes of a case of cut throat in a man sixty-two years old, in which the common carotid was wounded and successfully sutured. From this case and others in literature he has come to the conclusion that ligature of the carotid for a wound is not the best treatment, and that better results will be obtained by suture

or, if too extensively wounded, by invagination after Murphy's method. Even if the lumen of the vessel is not preserved, it gives more time for a collateral circulation to be established, and the blood supply of the brain is not suddenly, but gradually, interfered with.

REFERENCES.—[1] *Beitrage z. klin. Chir.*, Bnd. xxv, Hft. 3; [2] *Gaz. des Hôp.*, March 14, 1901, p. 297; [3] *Deut. Med. Zeit.*, Oct. 4, 1900, p. 944; quoted from *Münch. Med. Woch.*, No. 33, 1900.

ARTERIO-SCLEROSIS. *Prof. Alfred H. Carter, M.D., F.R.C.P.*

Accentuation of the aortic second at the level of the second right rib-cartilage has long been recognised as a sign of high arterial tension, and is of common occurrence in arterio-sclerosis. It is not so generally known that over the back this accentuation is best marked at the level of the spine of the left scapula. Friedmann[1] is convinced from an examination of many patients that in arterio-sclerotics the maximum of accentuation is always to be found at a point near the angle of the left scapula, on a line extending from the angle of the scapula to the spine of the seventh dorsal vertebra. The patient should have the arms crossed over the chest, so as to increase the interscapular space, and should breathe naturally and quickly. Stoppage of the breathing, especially in expiration, interferes with the perception of the aortic sound. Friedmann has found that in healthy subjects, and up to the age of forty or forty-five, aortic sounds heard over the back have still their point of maximum intensity at the level of the spine of the left scapula, but with advancing years this point becomes lower, though never reaching the lower angle of the scapula unless there is general arterio-sclerosis. He has observed this sign (maximum accentuation at the lower angle of the left scapula) not only in advanced arterial disease, but in the initial stages of this affection, even in relatively young persons (thirty-two to thirty-four years of age). On the other hand, he has not been able to discover it in old persons who appeared to be free from vascular lesions. He concludes that this is an early and pathognomonic sign of general arterio-sclerosis.

Arterio-sclerosis and Arterial Hypertonus.—W. Russell[2] has made a careful study of this matter. In the paper referred to he first draws attention to the frequent confusion between atheroma and arterio-sclerosis, which he regards as two entirely different processes. Next, he refers to confusion between increased blood-pressure and increased tonic contraction (hypertonicity) of the arterial wall, pointing out that though the two are often associated, yet, when the force of the heart's action is concurrently reduced, hypertonicity may be

associated with low blood-pressure, and was not infrequently the precursor of heart-failure. The thickened intima and hypertonus were both induced by the circulation of toxic and deleterious matter in the blood. On the one hand it set up an irritative hyperplasia of the sub-endothelial connective tissue; and on the other hand it induced a tonic contraction of the muscular coat, which in time led to a permanent hypertrophy.

TREATMENT.[3]—In the first place, all persons with a tendency to rigid arteries should be prohibited alcoholic drinks. It is no longer necessary to argue this question. The patient must be cautioned against all forms of violent exercise or overwork; and, further, he should be advised to arrange his affairs so as to have as little worry as possible. Butcher meats should be reduced; better still, cut ott altogether. There is no fear of the patient starving. Enough animal and nitrogenous products can be obtained from milk and a little egg. In bread and many vegetables there are nitrogen-bearing compounds. The elimination from the dietary of alcohol, meats, salmon, lobster, game, turkey, goose, duck, cheese, beans, and the more highly nitrogenous foods, will, in time, relieve the system of those waste products that are instrumental in causing rigidity and contraction of the arterial system.

The emunctories should be kept active. The skin and kidneys should be made to do active duty. This can always be brought about by inducing the patient to drink plenty of water. Water once introduced into the system must come out somewhere, and its main channels of exit are the skin and kidneys. There is no better solvent than water. It dilutes the bile and the urine, lessening the tendency in these cases to gall-stones and renal calculi. It dilutes and washes out of the system the compounds of uric acid that act so injuriously on the liver, kidneys, and smaller arteries.

With regard to drugs there need not be much said. If the hygienic and dietetic treatment be carefully observed, there will not be much need for drugs. One drug, however, deserves special mention. **Potassium Iodide** is the drug of the arterial system. It need not be given in large doses; 2 or 3 grains in water, after meals, will prove quite ample. It will act better and cause less annoyance to the patient if it is combined with an equal dose of **Ammon. Carb.**

REFERENCES.—[1]*Wien. klin. Woch.*, June 21, 1900; [2]*Brit. Med. Jour.*, May 18, 1901; [3]Editorial, *Canad. Pract.*, Dec., 1900.

ARTHRITIS. (See "Gonorrhœal," "Pneumonia, Arthritis in," and "Rheumatoid.")

ASCITES. (See Liver.")

ASCITES (Chylous). *R. Hutchison, M.D.*

Halliday Croom[1] has reported a case of this rare condition. He considers that the cause of chylous extravasation is either an obstruction to the flow of chyle, or a distinct rupture of the thoracic duct or of the receptaculum chyli. In some cases the lesion was in the thoracic duct itself, whereas in others it has been due to congestion of the larger lymphatic capillaries or of the smaller lacteals within the mesentery itself. In most of the cases the termination has been fatal, due partly to the original disease and partly to the consequent starvation. Some authorities have endeavoured to differentiate between a true chylous ascites and an ascites adiposus or chyliformis. Microscopically the fluids are similar in appearance, but on chemical and microscopic examination the differences are detected. In chylous ascites the microscope reveals very finely granular fat cells and an absence of large fat-globules ; and in adipose ascites chemical examination shows the presence of sugar ; it shows similar but much larger fat cells, lymph cells, and in some cases cancer cells. This variety occurs chiefly in tuberculous or malignant peritonitis, and is a result of a fatty degeneration of the serous endothelium and of lymph and pus cells.

Micheli and Mattirolo[2] are of opinion that in some forms of chyliform ascites the opalescence is due to lecithin.

REFERENCES.—[1]*Lancet*, June 23, 1900 ; [2]*Med. Record*, Feb. 10, 1900.

ASEPTIC SURGERY (in New York). *Howard Gladstone, M.D.*

The operation theatres in New York city being quite open and free of access to medical men, a visitor can go the round of the large hospitals, and acquire a good general idea of the state of aseptic surgery in America. But a visit may be made of more real value if one notices in each theatre the mode of treatment of the various details of technic. For instance, whether the surgeon does or does not wear gloves during an operation, or what solutions are used for cleansing the skin, etc., etc. By such a comparative survey one may test the value of certain procedures, and see what is the consensus of opinion with regard to them. The following remarks are founded upon data collected during a visit to New York, in 1899, and are arranged under the headings of : (1,) Theatre construction and fitting ; (2,) Sterilisation methods; (3,) Preservation of asepsis after sterilisation; (4,) Dressings, etc. Plans of two of the theatres are also given in illustration.

THEATRE CONSTRUCTION.—The three best theatres are the St. Luke's (*Fig.* 11), the Presbyterian, and the Marion Sim's. Built largely of marble, with separate entrances for visitors and for the surgical staff, aseptic methods have every chance of success. The auditorium is specially constructed, and the seats are of simple construction, so that a hose may be played all over them, and the water drain down the slope and run away below.

The operating area, floored by tesselated stone, is separated by a wall of marble slabs from the lowest tier of seats. It is approached by the staff through (1,) A dressing room, where coats are changed, and a shower bath may, if desired, be taken (but this is not usually deemed necessary); and (2,) A washing room, where hands are cleaned and disinfected, and which leads into the theatre proper.

The patient is anæsthetised in one side room, and after the operation is taken into another room to recover. Instruments are stored in glass cases, in another room off the theatre; and sterilisation methods take place in another adjoining space. There is a small fully-equipped private theatre reserved for special cases. The theatre is thus freed from many dust-harbouring objects, which are placed instead in these numerous side rooms.

In the Cancer and Ruptured Children's (*Fig.* 12) hospitals, the theatre construction is almost as perfect as in the first group just described, but less accommodation is reserved for visitors, and they have to come through the area to the stands set apart for them.

The German and the Women's hospitals have nothing to be remarked on in the construction of their theatres, and the same applies to five other hospitals, which will be referred to later on.

All the operation theatres that I visited were at the top of the buildings, with fine illumination by side and skylight windows, and powerful incandescent gas and electric lighting arrangements. They are heated by filtered and moistened hot air, driven in by the big fan at the basement. Their floors are of stone; the walls tiled, painted, or made of marble.

Theatre Fittings.—I noticed that all the theatres, even the smallest, had aseptic furniture, stands, tables, etc., made of white metal and glass and that in profusion. Each stand was set apart for a special purpose, so that everything could be laid ready to hand in a place where one knew where to find it. Though some of the smaller theatres thus appeared overcrowded, there is no doubt but that it led to orderliness, and induced rapid operating. Prominent features in each were the two large cylindrical vessels for hot and cold water, sterilised by means of steam coils inside. To prevent infection of their taps, a

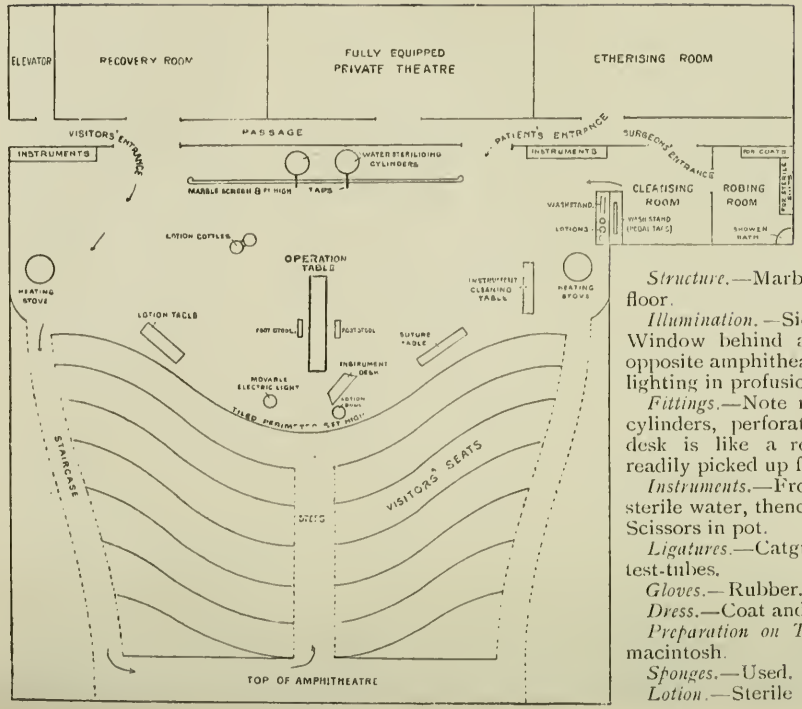

Fig. 11.

THEATRE OF ST. LUKE'S HOSPITAL (NEW YORK).

Structure.—Marble and tiled walls, tesselated floor.

Illumination.—Side windows in dome above. Window behind amphitheatre. Three windows opposite amphitheatre. Electric and incandescent lighting in profusion.

Fittings.—Note marble screen in front of water cylinders, perforated by their taps. Instrument desk is like a reading desk, instruments more readily picked up from it; three feet high.

Instruments.—From boiling water to bowl of cold sterile water, thence to dry towels. Forceps in jar. Scissors in pot.

Ligatures.—Catgut. Kept in wool-stoppered test-tubes.

Gloves.—Rubber.

Dress.—Coat and trouser suit.

Preparation on Table.—Rubber sheet instead of macintosh.

Sponges.—Used.

Lotion.—Sterile water.

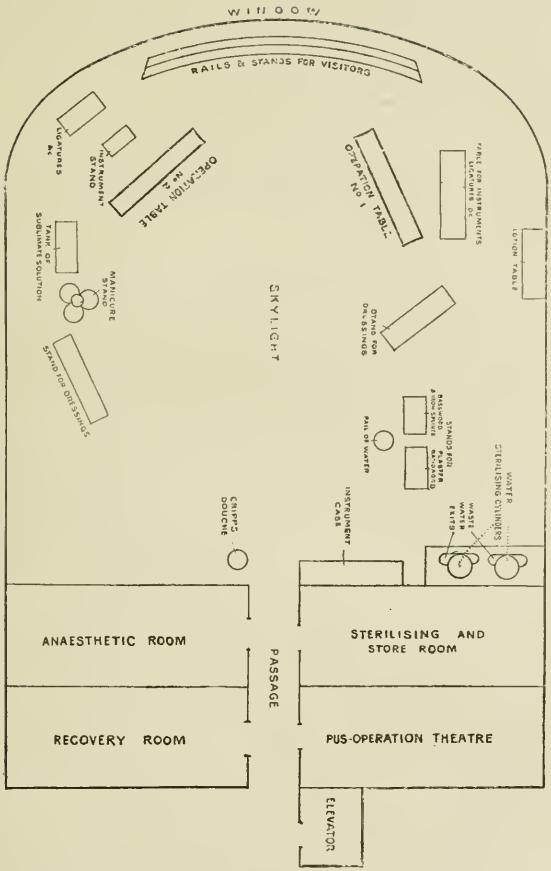

Fig. 12.—Ruptured and Crippled Children's Hospital (New York).

Structure.—Marble walls (rounded angles), tesselated floors

Illumination.—Skylight and large window opposite passage

Special pus theatre. Plaster of Paris largely used. Iodoform gauze. Basswood splints.

wet mop was often tied over them when not in use, and nozzles of douches were kept similarly covered in moist aseptic cloths.

The surgeon has his requisites for use during the operation laid out on either a semi-circular table, in the hollow of which he stands, or on a movable waggon, or on glass-topped stands. Basin stands, either single or double, always stood in suitable places. At one hospital four basins were supported on one frame, for lotion, scrubbing brush, finger-stalls, and rubber gloves respectively. Without further details, it may be briefly stated that all modern aseptic furniture was employed without stint. We now turn to the methods of attaining the aseptic state.

STERILISATION METHODS.—*Instruments* are boiled in soda solution, and all cloths and dressings subjected to dry steam, in all the theatres.

Hand Cleansing.—The surgeon's hands are cleansed by two methods, each of which begins by scrubbing for five minutes with potash soap, and rinsing them from time to time in lysol solution, or under a tap of water with pedal adjustment if possible. Then follows immersion in a bowl of alcohol. The next steps vary according as the corrosive, or Condy and oxalic method, is practised. In the former, the hands are transferred into a watery 1-1000 solution of corrosive, and then rinsed in sterile water. In the latter, which is rather the favourite method, a hot watery solution of permanganate of potash is used, and in this the hands are steeped until the skin is stained a deep mahogany brown, usually after one or two minutes. They are then put into the next bowl of a hot saturated aqueous solution of oxalic acid until the stain has been removed; then into sterile lime-water to remove the acid, and finally through sterile water. Chlorinated lime may take the place of the permanganate stage, and was used in the Presbyterian and Polyclinic.

Use of Gloves.—Gloves were worn in most of the theatres, the exceptions being the Presbyterian and the Women's. In the Marion Sim's and St. Luke's, all the operators wore rubber gloves. Soapstone powder is first rubbed over the wearer's fingers, and the thin tight-fitting gloves are then easily pulled on. A few turns of moist gauze bandage are wrapped round them at the wrists, and secured by an elastic ring. In the Sim's the nurses wear them as well, while at St. Luke's they hand things through a towel. Afterwards the surgeon washes his hands with the gloves on in soap and lysol, and throws the gloves into a pot of corrosive solution. A cleaned pair is used for each operation. In the German, all wore white cotton gloves in aseptic cases, and put on clean ones towards the end of the operation, for attending

to the dressings, etc. In the Cancer, the surgeon wore no gloves, but all the assistants wore the cotton ones. In the Polyclinic, the surgeon wore finger-stalls, everyone else cotton gloves. An assistant, who had charge of a retractor, wore an armlet of wet gauze to prevent contact with his forearm, which lay close to the field of operation ; a towel was pinned to the anæsthetist's cone lest it should be accidentally touched.

Caps and Respirators.—In four hospitals (*viz.*, Cancer, Women's, German, and Polyclinic) the operator's heads were covered with linen caps or folded towels, to prevent chance particles of scurf dropping into the wound.

In the German, precautions were also taken against particles flying from the surgeon's mouths, and in the expired air. They preserved silence during an aseptic operation, and wore a wisp of gauze as a veil over the nose and mouth, passing above the ears and tied behind. This was the only place where such muzzles were employed.

Operators' Costumes.—The costume of the operator and the assistants, was either a long white gown, over a mackintosh apron, or a white cloth suit, jacket and trousers. The latter form was used in four of the best hospitals, *viz.*, St. Luke's, Sim's, Presbyterian, and Women's, and allows more freedom to the limbs. Ordinary coats are of course first removed, collars as well sometimes, and the arms are bare below the elbow. At the Women's, everyone wore white canvas rubber-soled shoes. Wooden clogs were used over the boots at the German. All nurses everywhere wore white gowns, and the anæsthetist a white covering to his clothes.

Cleansing of Patient's Skin.—Sterilisation of the patient's skin is always finally conducted in the theatre. The solutions used for this purpose are very handily contained in 1 litre glass flasks, with wool stoppers. Fluids can thus be emptied on to the skin, without contamination of the residue in the bottle. The cleansing process begins with scrubbing in tincture of green soap ; then sterile water washes this away ; a mop lying in a glass bowl, with ether, is handed to the cleanser for application ; and then a mop soaking in alcohol. The flask of 1-1000 corrosive solution is next brought to flush the surface, and finally a quantity of sterile water is doused over, and the surface covered with a wet towel moistened in sterile water. At the German hospital they used in addition etherial solution of iodoform, so as to saturate the sweat ducts with an antiseptic substance.

Preparation of Patient on the Table.—To drain off the water during

these cleansing processes, a Kelly's pneumatic rubber shoot has been previously placed under the patient. Instead of this, three sand bags may be laid on the table to form three sides of a square ; a mackintosh is put over these, and hangs down the side of the table over a bucket; the water is thus diverted in a proper direction. This simple arrangement was used in MacBurnie's theatre, and it is easier to clean than a Kelly's shoot. The skin cleansing being finished, soiled towels are thrown off, leaving the long mackintosh, with an abdominal window, covering the body from the neck down to below the feet. Over this is placed a white cloth sheet to match, and towels are arranged around the opening. They were in most cases dry towels. MacBurnie and Meyer preferred them moist, and had them kept fresh and hot by constant changing or additions ; they are wrung out of sterile salt solution in aseptic operations, out of corrosive in other cases.

Preservation of Asepsis.—Having seen the operators cleansed and suitably attired, it remains to notice the precautions taken to maintain the aseptic state through the operation, and the most important details concerning wound treatment and dressings.

Aseptic transit.—Instruments are brought from the steriliser and placed usually on a dry towel, or into a dish of sterile water ; the cloths in which they were boiled are removed there, and the bunch of artery forceps taken off the key-ring which has kept them together. Instruments are never soaked in antiseptic solutions after sterilisation. Artery forceps are sometimes stood in a glass jar with their handles uppermost, ready for the operator to seize (St. Luke's).

Water for lotions is transferred from the sterilisers in enamelled jugs, and emptied into basins, or glass or rubber douches. In MacBurnie's clinic, the same vessel is used to draw the water and to empty it over the wound, without the use of douche reservoirs at all.

Mops and pads are tipped out of the muslin bags in which they were steamed into a towel lining a basin ; the purse string at the mouth of the bag being loosened and the contents exuded by eversion. The towel is drawn over them, and the basin holding a nest of mops is stood close to the surgeon, where he can help himself to them (Women's).

Dressings were usually brought in wrapped in towels and laid on a glass shelf. At the Sim's, they were brought in undisturbed in metal kettles from the steriliser ; when they were wanted the nurse opened the lid, and the operator, turning aside the towels within, picked

out the dressings himself. In other theatres, mops and dressings were handed by nurses, who nearly always wore gloves, or used a towel or forceps to pick them up with.

Sponges or Mops.—Sponges were used at the Sim's and St. Luke's, and also at the Presbyterian for aseptic cases; at the latter they were used only once and then burnt. In the German and St. Vincent's, they were in use for septic operations, and cleansed by prolonged soaking, etc. In most of the hospitals, squares of dry sterile gauze were used instead of sponges. Gamgee balls were also in favour. Large pieces of gauze stitched into thick pads took the place of flat sponges, and could be sterilised for subsequent operations.

Lotions.—As regards the lotions used in an operation, the custom varied. In the first place, no carbolic lotion comes near a fresh wound. Some surgeons cleaned the wound by dry gauze, without any lotion at all (Bull and W. B. Coley). Usually sterile water or salt solution was used more or less freely. MacBurnie had the jug of salt solution emptied over the wound at each stage in his operations. In the German, Polyclinic, and in others probably, saline fluid was used to clean up the wound. It is easily made by adding a certain quantity of concentrated salt solution to each jugful of water after it is drawn from the steriliser.

In septic cases only was any antiseptic lotion employed, and then a weak corrosive solution.

Conclusion of the Operation.—The last stitch having been inserted, a pad of gauze is clapped over and held there by an assistant. Sterile water is doused over the surrounding skin to remove blood stains, and then with the utmost expedition all wet cloths are removed, the skin is dried, and clean dry towels are laid down. During this interval the chief operators have been employed washing their gloves, or changing them if cotton ones, or rinsing their hands in the neighbouring basins. Returning to the wound, the drainage tubes are put in, if required. MacBurnie uses little folded slips of gutta-percha tissue; others use drainage tubes split longitudinally in halves, so as not to unduly distend the opening in the wound. The dressings are then brought.

Dressings.—The almost universal dressing used is plain sterile gauze. I did not see any blue alembroth gauze at all. Dryness being the best germicide, the gauze is sufficient alone, for its open texture allows rapid evaporation of the fluids taken up by it. Gauze is laid on in thick layers; first three or four crumpled up sheets, then flat pads. The layer of cotton wool over this is quite a thin

one, so as not to impede transpiration, but only to filter the interchanging air. For wool is not nearly so good an absorbent as gauze, and should not be put on to take up discharges, but only for its filtering, elastic, and supporting properties.

Antiseptics.—Although dryness may usually be considered sufficient to kill the germs which will subsequently be worked up to the surface from the depths of the sweat ducts during the week following an operation, some think it safer to dust on some non-irritating antiseptic powder before putting on the gauze. Thus, aristol is so used in Polyclinic and Ruptured Children's, and acetanilid in the Women's and St. Vincent's. Acetanilid gauze was used in a septic case at St. Vincent's, and aristol was also dusted on an oöphorectomy pedicle at the Women's, to prevent adhesions. Bull and Coley were exceptional in that they used 10 per cent. iodoform gauze, wrung out of corrosive solution, for aseptic cases.

Bandaging.—Finally we come to bandaging; to fix dressings, exclude air, and support and protect the wound. For putting on roller bandages over the abdomen, they use sacral props of various shapes to raise the pelvis. The first gauze bandage is usually put on to secure the gauze in position, before the layer of wool is applied. In some theatres (Cancer, Post-Graduate, Ruptured Children's) they use strips of adhesive strapping to prevent the gauze from shifting, and then the gauze bandage. Before the operation, strips are cut off from a reel of Seabury's aseptic plaster, and lightly stuck against a porcelain slab, or a sheet of sterile muslin, for protection against dust; they are torn off by the surgeon when required.

MacBurnie uses for his appendix cases a stout abdominal binder, instead of a roller bandage. To its lower border behind is attached a cloth strap, which is brought forward by the perineum and pinned in front. After a Bassini radical cure of hernia, he uses a roller bandage, instead of the strap, which passes as a figure of eight over the binder and round the leg; then the perineum, which is the weak spot, is padded with gauze, and the dressing completed with double spica bandages.

In the Ruptured and Crippled Children's hospital, plaster of Paris is usually put on last, and prevents the child wetting the dressing; in a wound near the hip, the joint and the knee are controlled by incorporating a long anterior iron splint, and several laths of bass wood in the plaster bandages. Bass wood is exceedingly light, pliable and tough.

The American Surgeon.—One cannot conclude without expressing admiration at the dexterity and rapidity of the operators,

and the training and efficiency of their assistants. Every detail has been studied beforehand. The surgeon does not look up to grasp the ligature or instrument, but just puts out his hand, where he knows it will be held ready; neither does he trouble, in stitching, about the thread, his assistant keeps hold of one end of it, and cuts it free the opposite side. This system of perfect co-operation of surgeon and assistant materially saves time.

American surgeons have constantly kept a watchful eye on the progress of modern scientific research in Europe, and latterly in their own country as well, and have shown great eagerness in rapidly applying new principles. Aseptic ideas have, with them, largely superseded antiseptic, and one is struck by the fact that every theatre in New York is already fully supplied with furniture of aseptic pattern, and with the necessary appliances for sterilising dressings, instruments, and water by thermal agency. Some of the theatres (for example, the German) were not of modern construction, but this defect was made up by the existence in the occupants of what may be called the "bacteriological conscience"; whereby all possible sources of infection are appreciated and guarded against. Probably in no city are aseptic methods in more general use or fuller development than in the city of New York, and those who are visiting America should not fail to go the round of these hospitals and operating theatres.

ASTHMA. *Prof. H. P. Loomis, M.D., New York.*

Glasgow[1] calls attention to the part played by laryngitis in causing the asthmatic paroxysm. Asthma is a vaso-motor neurosis provoked by peripheral irritation of the sympathetic. This irritation generally lies in the upper portion of the respiratory tract. The most sensitive areas are the posterior surface of the turbinates, the interarytenoid commissure, the posterior surface of the trachea, and the membrane at the bifurcation of the trachea. Irritation of any of these spots will cause reflex cough and the symptoms of asthma. The interary-tenoid region is, Glasgow thinks, the most frequent site of irritation. This may be due to a primary laryngitis, irrespective of any nasal pathological condition. He recommends local applications. Those he has used were chiefly **Carbolised Iodine,** and the constitutional remedies, **Iodide of Potassium, Antipyrin, Stramonium, Codeine,** and **Nitroglycerine.**

Lobeline has been quite largely used in the treatment of asthma with pretty good results, in that it exercises very useful therapeutic influence upon the bronchial tubes. Nunez[2] has used lobeline by the

mouth or hypodermically in doses varying from 1 to 7 grains; quantities which are perhaps rather large until it is proved by experience that the patient is not very susceptible to the drug. It is claimed, however, that the patient speedily gets accustomed to it, so that large doses are often necessary. The drug may be given, it is stated, in the dose of $\frac{1}{6}$ to 1 grain for children who suffer from asthmatic attacks.

REFERENCES.—[1]*New York Med. Jour.*, Aug. 25, 1900; [2]*Jour. de Méd. de Paris*, Feb., 1900.

BERI-BERI. *James Cantlie, M.B., F.R.C.S.*

At the present moment a good deal of attention is being paid to the etiology of this ailment. The most recent endeavour in that direction is that of the London School of Tropical Medicine, and consists of an expedition being sent out to Christmas Island, off the coast of Java, where favourable opportunities for investigating the causation of beri-beri are to hand. Max F. Simon,[1] C.M.G., discussing "the known and the unknown in respect of beri-beri," gives it as his opinion that the best chance for the discovery of the cause lies in the domain of the pathological chemist, in the investigations of the chemistry of the blood. Simon submits the following points for consideration: (1,) Proof of infectivity of beri-beri blood serum; (2,) A careful chemical analysis of beri-beri blood, especially of the serum thereof, and comparison with the blood of healthy persons; (3,) Comparison of conditions prevailing amongst communities in which beri-beri does and does not occur.

The belief that the arsenical poisoning which occurred in Manchester and elsewhere in England during 1900-01, caused symptoms allied to beri-beri, suggested the idea that perhaps beri-beri was due to a metallic poison, or actually to arsenic itself. In refutation of this belief it must be remembered that in arsenical and other metallic poisoning, pigmentation and other affections of the skin, affections of the eye, etc., are generally present, but are never met with in beri-beri. Metallic poisoning, if the cause, could be conveyed presumably only by cooking utensils, and a careful investigation in this direction gave negative results.

F. W. Mott, F.R.S., and Professor Halliburton[2] found cholin in the blood of beri-beri patients, but in addition they once obtained a toxic effect from beri-beri blood that could not be explained by the presence of cholin, which is merely a result of nerve degeneration. Capt. E. R. Rost, I.M.S.,[3] draws attention to the possibility of infection of beri-beri conveyed by a micrococcus inhabiting rice and

found in the blood and the cerebro-spinal fluid of beri-beri patients, the same organism as he met with in rice-water. The organism described by Rost is a diplo-bacillus generally seen as an angular organism ; it developes by spores, the spores split into two, become elliptical and grow out into rods. The organism is readily stained by carbo-fuschine; it is very active, and moves along wagging one end in front of the other.

R. M. Gibson[4] in discussing beri-beri in Hong-kong, states that the majority of cases occur between the ages of eighteen and thirty-two, but a child of two and a man of seventy-seven contracted the disease. The mortality varies with different outbreaks ; in some years but 10 per cent. of those attacked dying, whereas in others it exceeds 45 per cent. According to Gibson the first step in treatment is to remove the patient from the place where he contracted the disease, and if possible place him in a dry, airy house. The diet should be changed to beans and fat pork, beans possessing a larger percentage of nitrogen and fat than rice. **Digitalis, Iron, Phosphoric Acid, Arsenic**, and **Strychnine**, have been employed with advantage during convalescence from beri-beri ; the linimentum terebinthæ is recommended to be rubbed into the muscles most affected.

The Cockroach as a cause of Beri-beri is mentioned by A. Van der Scheer, formerly of Java.[5] He concludes that as beri-beri has none of the features of a miasmatic disease, as it is not contagious, and that it cannot be ascribed to either food or damp, we must suppose that it is due to parasites The *blatta orientalis* (cockroach) is present in all countries in which beri-beri exists ; it is possible the blatta eats human fæces ; man may become infected by blatta excrement, a part of the life cycle of the parasite taking place in the body of the blatta species. H. Noble Joint,[6] of Fiji, commenting on Van der Scheer's suggestion that cockroaches carry beri-beri, gives reasons for attributing beri-beri to a slowly infective germ carried by man, by clothing, etc., and propagated by direct contact and by dwelling in a house saturated with the germs. Joynt, in recording an outbreak in Fiji amongst Japanese coolies, states that the coolies arrived in April. One month after arrival the first case of beri-beri occurred, but not until September (the hot season) did the disease become epidemic. Alongside of the Japanese dwellings Indian coolies resided, yet not a single Indian contracted the disease. The Japs were cleanly, the Indians the opposite, and if cockroaches were responsible for the disease the quarters of the Indians must have swarmed with them. The Indians and Japanese worked

together and had much the same food. Of 250 Japanese, 226 contracted the disease, and it is possible that those who escaped had had the disease previously.

REFERENCES.—[1] *Jour. Trop. Med.*, Sept., 1900, and Sept. 2, 1901 ; [2] *Brit. Med. Jour.*, June and July, 1900 ; [3] *Ind. Med. Gaz.*, Dec., 1900 ; [4] *Jour. Trop. Med.*, March 15, 1901 ; [5] *Ibid.*, Nov., 1900 ; [6] *Ibid.*, May 1, 1901.

BLACKWATER FEVER, *James Cantlie, M.B., F.R.C.S.*

Strachan[1] states : (1,) That cases of blackwater fever occur, unlike malarial cases, all through the year, and quite independently of the presence or absence of malaria ; (2,) Quinine is not essential in the treatment of the disease ; (3,) That blackwater fever proves fatal by the rapid destruction of red blood corpuscles ; (4,) That it may attack persons who have never taken quinine, and that habitual quinine takers may escape it ; (5,) Anæmic persons, if attacked, are less likely to recover ; (6,) Repeated attacks are by no means uncommon.

Hans Ziemann,[2] as the result of experience gained at the Cameroons, West Africa, is of opinion that : (1,) Blackwater fever arises most readily in persons who have been infected with the minute parasites of tropical or æstivo-autumnal fever ; (2,) No specific cause of the fever is known ; (3,) A predisposition to the disease becomes established in a certain number of persons, and in general the predisposition increases with the number of attacks of malaria which the patients have had ; on the other hand it may diminish if some power of resistance to malaria is attained. The conditions under which blackwater fever arises, assuming predisposition, may be reduced to four, namely : (1,) In the course of an attack of malaria without quinine having been given ; (2,) In the course of an attack of malaria treated with quinine ; (3,) In patients who have recovered from malaria and have no parasites in their peripheral blood, but are nevertheless taking quinine ; and (4,) In persons who have recovered from malaria and blackwater fever, and have no parasites in their peripheral blood and are not taking quinine. *Blackwater fever occurs among negroes who have never taken quinine.*

Ziemann relates a case of malaria in which ⅛-grain of quinine was administered and hæmoglobinuria supervened. C. B. Banks[3] relates his personal experiences of attacks of blackwater fever. During eighteen years' residence on the Congo, Banks had twelve or thirteen attacks of the disease. The first attack came on after a residence of twelve months on the Congo. Jaundice and a temperature of 105° F. accompanied the attack. The change in the

urine usually shewed itself in from ten to forty hours after the commencement of the fever.

H. Hearsey[4] defines hæmoglobinuric fever as an acute febrile disease, most probably of malarial origin, and characterized by the occurrence of an extensive and rapid hæmolysis. The urine is acid in reaction, always albuminous, and deposits on standing a dirty brown sediment, consisting of epithelium, red granules of hæmoglobin, some granular *debris*, and hyaline casts. At times tube casts may be present containing blood pigment. In regard to diagnosis, Hearsey remarks that "apart from chemical tests, hæmoglobinuric urine can always be distinguished by the red colour of the froth as contrasted with the bright saffron of bilious urine."

The prognosis of the malady may be judged by the condition of the urine; if the urine is copious from the onset of the hæmoglobinuria the prognosis is good; but if the quantity is suddenly diminished and the urine appears dirty and deposits much sediment the prognosis is bad.

TREATMENT.—A. E. Cox[5] recommends **Calomel** in 5-grain doses every two hours until 20 grains are taken. **Strychnine Sulphate** $\frac{1}{30}$ grain every four hours, cold to the head, and tepid sponging followed by cold water sponging if temperature does not fall. Should the urine still continue bloody, **Sodium Hyposulphite** in drachm doses should be given every four hours until bowels are well moved.

Burns[6] believes that **Quinine Hydrochloride,** in $7\frac{1}{2}$ grain doses injected intra-gluteally, saved several of his patients. He gives in addition, **Calomel. Turpentine,** hot applications, and beef juice; and has also used **Normal Salt Solution,** per rectum. He found æstivo-autumnal parasites in all his cases of hæmoglobinuria. Hearsley[7] successfully treated seven consecutive cases of blackwater fever by administering a mixture consisting of :—

℞ Sodii Bicarb. gr. x | Aquam ad ℥j
Liq. Hydrarg. Perch. ♏ xxx |

administered every two hours during the first day, and every three hours during the four following days. By this treatment vomiting is allayed and the flow of urine increased. Quinine is *not* given. Should temperature remain high, **Phenacetin** in 5 to 10 grain doses may be given every four hours, with tepid sponging of the body. The diet should consist of milk, beef juices, or infants' foods, a little brandy being given occasionally if the condition of the heart renders it necessary. During convalescence, **Ferri et Ammonii Citras,** or **Ferri et Quininæ Citras** are recommended as tonics.

REFERENCES.—[1] *Jour. Trop. Med.*, Feb., 1900; [2] *Deut. Med. Woch.*, Oct. 4, 1900; *Lancet*, Nov. 3, 1900; [3] *Jour. Trop. Med.*, Dec., 1900; [4] *Brit. Med. Jour.*, Jan. 20, 1901; [5] *Med. Rec.*, Aug. 4, 1900; [6] *Jour. Amer. Med. Assoc.*, Nov. 17, 1900; [7] *Brit. Med. Jour.*, Jan. 20, 1901.

BLADDER (Diseases of). (See also "Exstrophy of Bladder").

E. Hurry Fenwick, F.R.C.S.

Transplantation of Bladder.—Mundell[1] has undertaken some experiments on animals with a view to ascertaining if it were possible to transplant the bladder of one animal into the body of another. He was successful in implanting a piece of the bladder wall of one dog into the abdominal wall of another, interposing it between the superficial and deep layers of the superficial fascia, and laying a sheet of gold foil between the mucous membrane of the bladder-wall graft and the deep layer of the fascia to prevent union of this surface. He proposes, in view of this success, to use the bladder wall of a sheep in like manner in a case of ectopia vesicæ, and when the graft is united to form a flap composed of the skin and superficial layer of fascia and sheep's bladder graft, to create an anterior wall for the bladder. By this means the surface exposed to the urine would consist of mucous membrane.

Bacillus coli communis in relation to Cystitis.—Dr. Kenneth Douglas[2] contributes a paper on this subject, based on work done in the Royal College of Physicians' Laboratory, Edinburgh. The seventeen male patients examined fall into three groups, excluding two solitary cases.

The first group (four cases) had alkaline and ammoniacal urine. Of these, three contained a pure culture of staphylococcus, and one a mild culture of staphylococcus, streptococcus, and the colon bacillus. Two of the cases had cystitis secondary to calculus, and two cystitis due to catheterisation.

The second group consisted of three cases of prostatic enlargement without decided evidence of cystitis. All three cases yielded pure cultures of the bacillus coli communis. In these cases the distinguishing character was the abundance of bacterial growth and the sparse occurrence of leucocytes, and they might fairly enough be termed cases of bacteriuria.

The third group included eight well-defined cases of cystitis with acid urine, and without disease of the prostate or any history of infection from instruments. Five of these cases gave the coli bacillus in pure culture with typical characters, and in the other three a bacillus was isolated so closely approaching it as to lead one to class it as "coli" too—perhaps a variety. The remaining two cases were

one of tubercular cystitis, from which tubercle bacilli alone were obtained, and one of gonorrhœal cystitis, the urine showing the gonococcus and a bacillus which retained Gram's stain.

Dr. Douglas gives the following summary of his interesting research :—

(1,) The bacillus coli communis is met with in the great bulk of cases of cystitis, and in many is apparently the determining cause of the disease.

(2,) In certain cases the organism is abundantly present during long periods in the bladder under favouring conditions, but without causing cystitis.

(3,) Certain of the facts lend support to the view that often the bacillus is a supplanter of other forms, rather than the initiating cause of the disease.

(4,) The marked polymorphism and varying pathogenicity of the organism would account for the conflicting opinions held regarding its identty, and its *rôle* in cystitis, and the confusion in nomenclature until recently prevailing.

(5,) No one culture reaction enables the organism to be recognised with certainty, but cultivation on several media is needful.

Treatment of Cystitis.—Scarcello and Sapuppo[3] recommend the injection of a 2 per cent. solution of **Zinc Sulpho-carbolate** in cases of purulent cystitis. Where the bladder showed marked irritability the solution was used in small quantity, but frequently repeated. In other cases ½ to 1 litre was injected twice daily. Improvement commenced as a rule on the second or third day. No relapses were observed in any of the cases (twenty-one in number) so treated.

Vesical Paralysis due to Lesions of the Central Nervous System.—Electrical Treatment.—Courtade[4] says that three indications for treatment are present :—

(1,) To act on the bladder muscle ; (2,) To act upon the nerve centres ; (3,) To stimulate the reflex arc.

(1,) The bladder muscle is treated by first filling the viscus to moderate distension with saline solution (7 in 1,000). A special electrode is then introduced into the interior of the catheter, through which the bladder was filled, and the other terminal of zinc, covered by chamois leather, is moistened and applied to the perineum or hypogastric region. A slowly-interrupting current is passed for five minutes, the proper intensity being gauged by the sensations of the patient. The galvanic current (10 to 15 mill.) may also be used, frequently reversing and interrupting the stream. If galvanic

electricity be employed, great care should be exercised to prevent the vesical electrode from touching the wall of the viscus, as galvanic electricity may produce troublesome sloughs.

(2,) The nerve centres are acted upon by an ascending and descending galvanic current which traverses the entire length of the spine; one terminal is applied to the perineum, while the other is passed up and down the dorso-lumbar region.

(3,) The reflex arc is acted upon by placing the positive pole upon the perineum, and the negative is passed over the dorso-lumbar and abdomino-crural regions. A rapidly intermitting Faradic current is used of sufficient strength to cause slight pain.

Static electricity may also be employed, the patient sitting upon an insulating chair and being connected with the negative pole of the machine.

[It cannot be said this treatment is new, nor can it be affirmed that it is often successful.—EDITOR.]

Ulcer of the Urinary Bladder.—Mr. Critchley Hinder[5] remarks that our knowledge of simple ulcer of the urinary bladder is somewhat inadequate. The condition is not mentioned in text-books, and little information can be gathered from special works on genito-urinary diseases. During the last four years he has now and again met with cases of bladder ulcer which had been wrongly diagnosed and treated. In women the uterus and adnexa were usually blamed, whereas in men the condition was supposed to be due to chronic prostatitis, cystitis, or stone in the bladder or ureter.

He believes that pelvic disease was the cause in some cases in women. One patient gave a definite history of a septic condition arising after confinement, which was followed by the passage of purulent material per urethram and relief of symptoms. When first examined she had an ulcer in the lower left quadrant, from which hung a thick slough. She was drained per urethram for three weeks, the ulcer then healed, and she had no further symptoms.

A second ulcer is sometimes found so situated with regard to the primary ulcer, that one can hardly avoid thinking that it was produced by infection from its neighbour. These ulcers are situated on the base and the corresponding post-pubic aspect of the bladder. He has only observed this condition in two cases, and they were situated at the postero-lateral angle.

One case of bladder ulcer was produced by infection from an outside source. A woman of thirty-four years was operated upon for appendicitis, "with abscess which somewhat involved the urinary bladder." When she had completely recovered from this attack,

the urinary symptoms continued and even became aggravated. Cystoscopic examination showed an ulcer the size of a shilling, with sharp, clear-cut edges.

Another case in a man was probably due to injury from the point of a catheter.

In several instances, however, the ulcer has had no relation to surrounding conditions. Nearly all of these were in patients between the ages of fifteen and thirty-five. In only two cases the onset was said to be sudden.

The most constant symptom in the early stage in all cases was pain and a desire to strain immedately after the act of micturition. Frequency of micturition is very common, and is usually present in advanced cases where cystitis has supervened. In rare cases it is observed where no cystitis is present. Men frequently complain of pain just behind the glans and on the lower surface of the penis. In women pain was complained of along the urethra and within the vagina, even when the ulcer was situated well back from the trigone. Suprapubic pain is rare.

If the ulcer is situated near the orifice of the ureter, very puzzling symptoms are likely to arise, and pain shooting up the ureter, or severe renal pain, may be experienced.

The ulcers are distinct, with a depressed base and clearly defined edges. In more recent cases the edge of the ulcer is in parts on a level with the surrounding surface.

The treatment Mr. Hinder first adopted was to open the bladder suprapubically and curette the ulcer. In men the bladder was drained by means of a perineal cystotomy. In women drainage was effected per urethram or by means of a vesico-vaginal fistula. Latterly, however, the following treatment has been found more satisfactory. In men the bladder is drained by a large metal tube passed into the bladder through a perineal cystotomy wound, and the bladder washed out through the tube every four hours with a weak antiseptic lotion, and each night with a solution of **Silver Nitrate,** 1 grain to the ounce. As a rule the ulcer was healed in three weeks' time. Almost all women will bear a double-channelled glass catheter tied in without suffering from urethral irritation, and by this means the same local treatment may be adopted.

This interesting subject is more fully dealt with by Hurry Fenwick in a booklet (1906), "Ulceration of the Bladder: Simple, Tuberculous, and Malignant"; also "Simple Ulceration," by Dr. René le Fur, Oct. 1901.

Therapy of Vesical Tuberculosis.—Leopold Caspar[6] considers that

general tonic and strengthening treatment is of the highest importance in tuberculosis of the bladder. Of the drugs for internal use, **Creosote** and **Guaiacal Carbonate** appear to give the best results, though positive conclusions are hard to draw. He considers urotropin useless in this class of urinary disease. The author believes, contrary to the opinion of many writers, that careful **Irrigation** may do much good, and in isolated cases may even effect a cure. The irrigations should always be very small in amount, and never carried to the point of the least distension. **Lactic Acid** (up to 20 per cent.) and **Bichloride** solutions (1 in 10,000 to 1 in 1,000) give the best results. Both, however, are painful, the former being especially so. Operative treatment should only be resorted to when the disease is strictly localised to small areas.

Mr. Fenwick advocates the use of Koch's **New Tuberculin** in recent cases of genito-urinary tuberculosis.

Continuous Catheterisation in the Treatment of Urinary Infection. Guyon and Michon[7] published some years ago a series of cases to prove that continuous **Catheterisation** was the safest and most successful treatment for urinary infection attended with fever. In a recent communication Guyon[8] again insists upon the value of this method. These cases include the last stage of prostatic enlargement, which are usually regarded as hopeless. Guyon reduces his mortality to 20 per cent. by this method. Suprapubic drainage, he says, is attended with a mortality of over 36 per cent. In over 50 per cent. of his recent cases defervescence took place in the first three days.

Christian[9] is also an advocate of this method of drainage of the bladder, and has recorded several cases to show its value.

Choice of Operation for Vesical Calculus.—At a meeting of the Johns Hopkins Hospital (April, 1900), Cabot[10] discussed at length the operations for stone in the bladder. In considering the comparative value of these operations, account must be taken of the death-rate which accompanies each, of the injury to important structures which each involves, and of the liability to a recurrence of stone formation which follows each. The stones which the author has met with have been as a rule secondary to enlargement of the prostate, and the majority have been phosphatic. The average age of these patients has been somewhat over sixty years. The material has therefore been as unfavourable to successful treatment as possible.

Litholapaxy was performed 122 times, suprapubic lithotomy twelve times, and perineal lithotomy once. Suprapubic lithotomy

was selected in two cases because the lithotrite would not enter the bladder without an undue exercise of force. In six cases the operation was primarily a prostatectomy, and in one case the co-existence of a myoma of the bladder wall compelled him to make a suprapubic incision. In two cases the stones were sacculated, and could not be reached by the lithotrite, while in one case the stone was so large that the lithotrite, when grasping it, would not lock.

Of the 122 litholapaxies, six patients died within a comparatively short time after the operation. Cabot describes the six fatal cases in full; they are here tabulated so that the principal points may be seen at a glance.

Sex and Age.	Condition Previous to Operation.	Character of Operation.	Cause of Death.	Time of Death.
1. M. 69	Feeble, Urine alk., amount good. Cough and purulent expectoration.	Stone small, soft. Operation easy.	Pneumonia.	10 days.
2. M. old	Complete prostatic retention. Suppression of urine.	Large oxalate of lime calculus.	Suppression of urine.	24 hours.
3. M. 60	Chronic bronchitis, "feeble heart," sleepless from pain and difficulty in micturition.	Rapid and easy. Anæsthetic, ether.	Heart failure.	days.
4. F. 62	Tuberculous glands in neck. Temperature.	Stone one ounce, hard glands curetted.	"Tuberculosis."	6 weeks.
5. M. 84	General condition not stated.	Large stone. Anæsthetic, ether.	Pulmonary embolism.	27 days.
6. M. 70	Feeble.	Operation easy.	Sudden death. P.M. Pyelitis and pyelonephritis.	3 days.

Death in case 4 could not be ascribed to the operation. In cases 1 and 3 death probably resulted from the irritation of the anæsthesia. Cases 2 and 6 died in spite of the operation, from the renal disease already present. In case 5 the pulmonary embolus may have come from the pelvic veins, and have been therefore an indirect result of the operation. If case 4 be excluded, the mortality is 4 per cent.

In future the author would prefer a suprapubic lithotomy under cocaine anæsthesia in a man suffering from serious bronchitis. An enlarged prostate may necessitate suprapubic lithotomy, as in two of Cabot's cases. Stricture of the urethra adds but little difficulty to the operation. A tight stricture in the perineum may be treated by external urethrotomy, and the opening thus made may be utilised for the litholapaxy.

[It is worthy of note that of over 300 lithotrities performed at Hyderabad, 10 per cent. were operated upon through a perineal wound,[11] in spite of the fact that statistics show for this modification of the Bigelow operation a double mortality, and that a much longer period of convalescence is necessary. Milton expresses his belief that this operation (Keith's) is most suitable for young children, and other patients with a diminished urethral calibre; as a refuge for the imperfectly equipped; and as a stepping stone to better methods. Milton's personal experience of litholapaxy for large stones has been, forty-three cases performed by the urethral route, with four deaths. By the perineal route he has performed thirty-two operations for large stones, with only two deaths.]

Cabot has only had one serious accident in his whole series of litholapaxies. In this case the bladder was very intolerant and spasmodic, and only two ounces of fluid were introduced. After crushing a small stone, it was found that the fluid did not return, and it was evident that the bladder had ruptured itself. An immediate laparotomy showed that the rupture was extra-peritoneal, on the left side of the pelvis. This collection of fluid was drained by an incision similar to that for tying the iliac artery, and a drainage tube was also introduced into the bladder through the peritoneum. The patient recovered, but continued to have an excessively irritable bladder.

In regard to the injury done by the different operations for stone, suprapubic lithotomy avoids important structures, but occasionally leaves an annoying and obstinate fistula. Perineal lithotomy (lateral) has the disadvantage of occasionally being followed by impotency, by stricture, and rarely by fistula. Cabot has seen instances of all of these sequelæ, and believes, therefore, that litholapaxy has a decided advantage in the avoidance of injury.

As to recurrence, two cases of uric acid stone recurred from persistence of the diathesis. In nineteen cases phosphatic stones recurred, but in six of these the first operation had been done by another operator. The recurrence of phosphatic stone may be due to persistence of the alkaline condition of the urine, or in a few cases

it is the result of an incomplete operation. In one of Cabot's cases recurrence was due to the projection of two stitches into the bladder from a vaginal lithotomy performed by another surgeon. In two cases sacculated stones lay in pockets in the vesical wall and gave rise to repeated stone formation in the bladder cavity. Wounds of the vesical wall do not heal by first intention, and are apt to leave a granulating spot on which calcareous material is liable to deposit. This probably explains the cases of recurrence of stone after suprapubic lithotomy.

Cabot's experience does not coincide with the view that recurrence of stone is specially prone to occur after litholapaxy. He believes that a mortality of 4 per cent. in a series of cases, averaging sixty years of age, is considerably less than could be expected from suprapubic lithotomy in a similar class of patients, and that the avoidance of fistulæ and the shortened convalescence add decided advantages to this method of operating.

Cunningham,[12] of Delhi, gives the mortality of litholapaxy in the hands of Indian surgeons for the five years ending 1895 as 3·96 per cent. in 10,073 operations, while the death-rate in lithotomy was probably near 25 per cent. Suprapubic lithotomy is recommended for two classes of cases—stone associated with tumour of the bladder, and stone associated with a projecting middle lobe of the prostate. The author is inclined to believe that the recurrence of stone after litholapaxy is about equal to that after lithotomy. Lisiansky[13] reports fifty cases of suprapubic cystotomy for stone. He discusses the question of closing the wound in the bladder and in the abdominal walls after the operation. The results of suprapubic cystotomy with suture have decidedly improved during the past ten or twelve years. The statistics of primary union of such wounds after suture vary from 30 to 86 per cent. of successful results.

Salomka regards the vesical suture as an essential part of the operation, and claims that it renders convalescence shorter and recovery more certain. The author, basing his opinion upon sixty-eight cases of suprapubic cystotomy for stone and two cases of the same operation for other conditions, cannot agree with this. The bladder cavity cannot be hermetically sealed; the urine penetrates through the wound into the space of Retzius in small quantities, and if it contains pus a septic pericystitis follows. If the urine does not contain pus, primary union usually takes place. Even if the urine contains pus there is a certain amount of probability of primary union if the patient is a strong and well-nourished subject.

The author sometimes fixes the sutured vesical wound to the

posterior surface of the rectus muscles, as suggested by Professor Rasumovsky. The general opinion seems to be that the fixation of the vesical wound to the abdominal parietes protects this part of the bladder from motion, and assists in obtaining a firm closure of the sutured surfaces. In the main the writer agrees with this, but he mentions a case in which a paroxysm of coughing caused the wound to stretch and allowed some urine to escape. In cases where fever or purulent cystitis is present, or where the vesical wound is bruised by the stone, and also in cases where the complete suture of the bladder wall is impossible or very difficult from technical reasons, the author applies a partial suture to the incision in the bladder. He inserts a drain, and places the patient in the prone position. He usually fixes the partially-sutured incision in the bladder to the posterior surface of the abdominal wall.

Golischewsky[14] believes that wounds of the bladder made intentionally or by accident should be closed by suture. The exceptions to this rule are cases in which cystitis is present, or there is marked hypertrophy of the bladder wall. Immediate suture is also contraindicated in cases complicated by renal disease or by hæmophilia. He practised immediate suture in thirty-five cases, and in twenty-seven of these the recovery was uninterrupted.

Jonnesco[15] has devised a method of suturing the bladder which has been uniformly successful in eight cases of suprapubic cystotomy. The method is one of the so-called "imbrication" methods, and by its means the incisions in the mucosa and muscularis are kept from directly overlying each other, and urinary infiltration is thus obviated. The method seems unnecessarily complicated, and from the description of sutures penetrating the mucous membrane, one might expect would be followed by the formation of phosphatic stone.

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BLOOD (Clinical Examination of). *T. N. Kelynack, M.D., M.R.C.P.*

Hæmatology has long proved a fascinating subject for research, and hæmopathology now affords results of considerable clinical value. By systematic examination considerable new light has been thrown

on morbid conditions of the blood and hæmopoietic tissues, far-reaching aid rendered to diagnosis, and suggestive indications afforded for prognosis in many conditions of general derangement. The rapid development of this branch of clinical pathology is due in great measure to recent improvements in the means of investigation, the introduction of instruments of precision, and the simplification and perfecting of methods of histological examination.

The blood offers a fruitful field for investigation, but the investigation bristles with difficulties. At present there is no very precise basis from which advance can be made. Physiological facts are incomplete, and pathology halts. Not only are there technical difficulties to be overcome, but many tendencies to fallacy have to be avoided. Among recent readily accessible works devoted to the examination of the blood, mention may be made of those by Cabot,[1] Coles,[2] Ehrlich and Lazarus,[3] Georges Hayem,[4] and Ewing.[5] Most of these furnish valuable bibliographical references. Ewing's work especially will be found of considerable value for purposes of reference.

Among the many contributions in standard text-books to the recent literature of the subject deserving of special mention, and which may be consulted with advantage, are those by T. Clifford Allbutt,[6] S. Monckton Copeman,[7] S. Coupland,[8] M. Foster,[9] S. West,[10] A. Gilbert,[11] L. Jenner,[12] T. H. Milroy,[13] W. Osler,[14] E. Parmentier,[15] C. E. Simon,[16] A. Stengel,[17] R. Stockman,[18] F. Taylor,[19] and Vierordt.[20] A useful summary of much of the recent work on the physiology and pathology of blood has been prepared by Forstmann,[21] and a valuable epitome of new work on the blood has been published by F. Bezançon.[22]

By the perfecting of modern methods of research, the blood can now be submitted to such physical, chemical, and microscopical examination as offers valuable assistance in clinical work. Not only can its general macroscopic and microscopic characters be easily ascertained, but such points as its reaction, density, chemical composition, colour index of hæmoglobin, coagulation point, and the like, can be obtained without difficulty.

In blood examination for practical purposes, as Henry F. Hewes[23] points out, we are chiefly concerned with determining the existence, severity, and type of anæmia; the determination of leucocytosis—its extent and type; the presence of blood parasites; the occurrence of definite serum reactions; and the detection of bacterial organisms. For purposes of rapid clinical assistance, the most valuable data are afforded by an estimation of the amount of hæmoglobin, and an examination of a suitably stained specimen of the blood.

Among the most serviceable results to clinical medicine which have accrued from the introduction of methods of staining, are those whereby our powers of differentiation of the different corpuscular elements have been greatly increased. Much progress has been made in the simplification of methods at first tedious in their complexity, perplexing in number, and often lengthy and elaborate in application; the complex has now become simple, the slow speedy, and by the adoption of a single method results of the greatest value in clinical work may be attained by anyone willing to undertake some preliminary practice and exercise a little patience. Full descriptions of the various methods which have been used will be found in many of the works above referred to, in Rudolf v. Taksch's admirable work on clinical diagnosis, and in papers by J. M'Gregor-Robertson, and J. S. M'Kendrick[24] and others. A number of methods are capable of giving excellent results, but it is well that one and one only should be mastered before attempting others, and for purposes of comparison and convenience in clinical work, it is well that a multiplication of methods should be avoided. Technical details can only be satisfactorily learnt by actual experience. The preliminary steps as to the collection of the blood and preparation of the film are necessarily much the same in all cases; there are, however, variations in the manner of fixing the film, and, as already indicated, wide differences in the selection of staining agents.

For convenience of application and excellence of results, Louis Jenner's method of staining is probably the best. For our present purpose it will suffice to briefly indicate the means whereby perfectly satisfactory results may be obtained, with least expenditure of time and trouble. The materials necessary include: A good microscope with oil immersion lens ($\frac{1}{12}$ in.); absolutely clean cover-glasses (No. 1, $\frac{5}{8}$ squares) and slides; forceps (Ehrlich's and Cornet's patterns being among the best); suitable instrument for drawing blood (an ordinary pen with half the point broken off forms a sharp, cheap, readily obtained, and easily sterilized dagger); and Eosin-methylene-blue solution in absolute methylic alcohol as stain.

Although "Jenner's stain for blood" can now usually be obtained through most of the reliable agents for microscopic materials, in order that no difficulty may arise, I am able through the kindness of Dr. Jenner to give precise particulars concerning its preparation. Two well-stoppered bottles of say 100 c.c. capacity each, are thoroughly cleaned, rinsed with distilled water, and dried in an oven. Into one bottle is put 0·5 gramme of Grübler's medicinal methylene blue and to this is added 100 c.c. of Merck's absolute methylic alcohol,

the stopper of the bottle being immediately replaced. Into the other bottle is placed 0·5 gramme of Grübler's water-soluble eosin (yellow shade), and on it is poured 100 c.c. of the absolute methylic alcohol, and the stopper at once replaced. These two bottles may then be kept as stock solutions, although even when mixed the stain will keep if properly protected. In mixing, take a perfectly clean and absolutely dry stoppered dropping bottle, and add 10 c.c. of the methylene blue solution and 12·5 c.c. of the eosin solution. Always see that all bottles are kept well-stoppered, since evaporation will lead to concentration of the stain, and when stronger than 0·5 per cent. the water with which the specimen is washed will cause a precipitate of the stain upon the cover-glass, and also because the absolute methylic alcohol will absorb water from the air, and so permit of the formation of a crystalline insoluble precipitate.[25]

In most of the methods hitherto in use, careful and often lengthy measures for the fixation of the blood films have to be adopted; heat, chemical agents in solution, and formalin vapour being most commonly employed; but when Jenner's method is employed no preliminary fixation is necessary. In actually carrying out the preparing of the cover-glass preparation the following procedure should be followed: (1,) After cleaning the skin and sterilizing the needle, draw a drop of blood by puncturing the finger or lobule of the ear; (2,) With the absolutely clean cover-glasses (Jenner advocates the cleansing of each separately, by rinsing in a mixture of chloroform 99 c.c., acetic acid 1 c.c., wiping in a soft fabric free from fluff, and finally passing ten times through the flame of a Bunsen burner) prepare exceedingly thin films. Unless the films are very thin the results will not be satisfactory; (3,) Place the cover-glasses, film side uppermost, on a tile or glass plate. Let fall a few drops of the stain, immediately closing the stopper of the dropping bottle, and at once covering over the cover-glass preparation with a watch glass. In a minute and a half pick up the cover-glass with suitable forceps, tip off the stain, and plunge under the surface of distilled water, and well rinse. On removing, drain off the excess of water by means of filter paper, and allow to dry. Mount in a drop of Merck's dammar lac in xylol. In Grübler's xylol balsam the preparations are less permanent. Preserve the specimens in cases protected from the light.

Plate *IX.* shows the results which may be obtained by following the above method, all the specimens being stained with the eosin-methlylene-blue in absolute methylic alcohol, according to L. Jenner's formula here given. The plate is also designed to serve

as a convenient chart for reference in the study of the normal and morbid characters of the corpuscular elements of the blood. The details are as follows :—

Fig. 1.—Various Forms of Red Corpuscle.

1. Normal red corpuscle or erythrocyte
1*a*. Side view of same
2. Microcyte
3. Macrocyte
4. Mono-nuclear normoblast
5. Double nucleated normoblast
6. Nucleus escaping from normoblast
7. Megaloblast
8. Microblast
9. Vacuolated erythrocyte
10. Polychromatophile
11. Poikilocytes
12. Erythrocyte showing granular degeneration

Fig. 2.—Various Forms of White Corpuscles.

a. Polymorphonuclear "neutrophile"
b. Polymorphonuclear eosinophile
c. Neutrophilic myelocyte
d. Eosinophilic myelocyte
e. Mixed granule leucocyte
f. Basophile (mast) cell
g. Small lymphocyte
h. Large lymphocyte
i. Transitional lymphocyte
j. Vacuolated lymphocyte

Fig. 3.—Normal Blood. The specimen shows : Two lymphocytes at upper part of field ; two polymorphonuclear "neutrophiles" at lower part of field ; erythrocytes ; and blood platelets.

Fig. 4.—Blood from Spleno-Medullary Leukæmia. The specimen shows :—

Nine myelocytes
Seven polymorphonuclear "neutrophiles"
Three basophiles
One lymphocyte
Three normoblasts
One polychromatophile
A few poikilocytes
Erythrocytes

Fig. 5.—Blood from Pernicious Anæmia. Specimen shows :—

Many poikilocytes
Two megaloblasts, one showing polychromatism
Three erythrocytes with polychromatic change
One erythrocyte showing polychromatic change and granular degeneration
Two erythrocytes showing granular degeneration
One myelocyte
Two lymphocytes
A few platelets

Fig. 6.—Blood from Lymphatic Leukæmia. Specimen shows :—

Numerous lymphocytes, some showing vacuolation
One polymorphonuclear "neutrophile"
Erythrocytes
A few poikilocytes

Fig 1

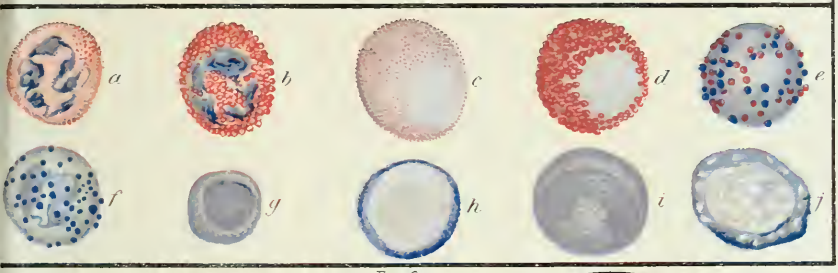

Fig 2

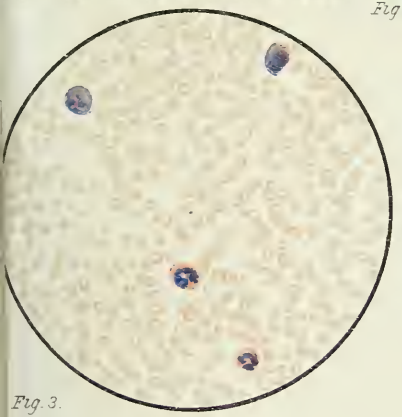

Fig. 3.

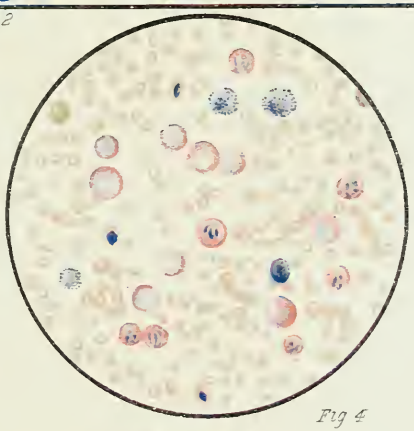

Fig 4

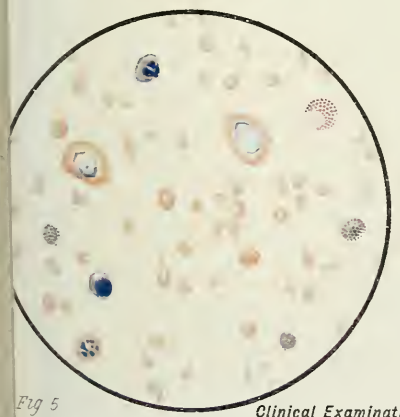

Fig 5

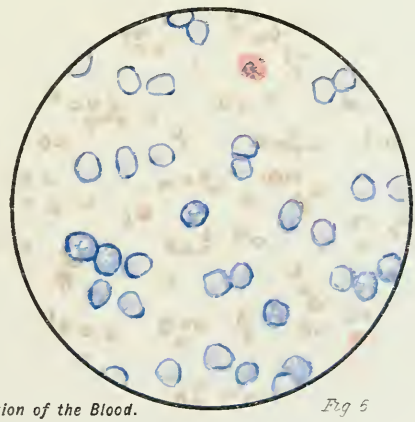

Fig 6

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J. G. Emanuel,[26] in a careful study of the blood in its clinical aspects, furnishes the following useful table, which will be found of service to those commencing the study of hæmopathology.

THE BLOOD CORPUSCLES.

RED.—*Average number* 5,000,000 *per cubic millimetre.*

PLACE OF ORIGIN	STAGES OR VARIETIES.
Bone marrow	Erythrocyte: The ordinary red blood corpuscle Normoblast: Regenerative cell found in all severe anæmias Megaloblast: Degenerative cell found in fatal anæmias

WHITE.—*Average number* 5,000—10,000 *per cubic millimetre.*

PLACE OF ORIGIN		PERCENTAGE IN NORMAL BLOOD	INCREASED IN
Bone marrow (Granular cells)	Polymorphonuclear neutrophile	70-72	Leucocytosis
	Polymorphonuclear eosinophile	2-4	Eosinophilia
	Neutrophilic myelocyte	Pathological	Myelocytæmia (myelogenic leukæmia)
	Eosinophilic myelocyte	Pathological	
	Mast cell	0·5	
Lymphatic system (Non-granular cells)	Small lymphocyte	22-25	Lymphæmia (lymphatic leukæmia)
	Large lymphocyte	2-4	
	Transitional		

Numerous papers have appeared of recent years clearly indicating the value of the systematic examination of the blood in disease. Some of these I have reviewed elsewhere.[27] The Pathological Society of London[28] and other scientific bodies[29] have submitted the matter to careful discussion, and there can be no doubt but that in the development of hæmatology lie many possibilities for usefulness both in diagnosis and prognosis.

The most attractive problems in modern hæmatology seem to centre around the leucocytes. J. A. Lombard's[30] interesting study on the physiology of the leucocyte, especially in relation to immunity, will be found of service for its useful bibliography. Reference to the more practical indications dependent on changes in the leucocytes will be found in the article on "Leucocytosis."

G. N. Stewart[31] has investigated the conditions that underlie the peculiarities in the behaviour of the coloured blood corpuscles to such substances as NH_4Cl, NaCl, and saponin, and finds the differences in reaction are not dependent on the life, but on the structure of the corpuscles, and not merely on the structure of the entire corpuscle, but to some extent on the structure of the stroma and envelope.

The question of granular degeneration of the red corpuscles has been elaborately investigated by C. Y. White and W. Pepper.[32] In this condition of granular, basic, or punctate degeneration of the erythrocyte. the cell presents fine or coarse granules that have an affinity for basic stains. Such occurs in cases of lead poisoning even before toxic symptoms appear. The granules seem to be due to degeneration of the erythrocyte. According to the observations of Moritz and others,[33] the occurrence of these basophile granules in the red cells in cases of lead poisoning furnish evidence of much diagnostic service.

The value of the agglutination of the red corpuscles for diagnostic purposes still continued to attract attention through the work of Bordet, Landsteiner, Shattock, Grünbaum, and others.

For the chemical examination of blood, J. S. Thacher[34] has invented a flask having a tubule at the bottom ground to fit an aspirator needle, and with means for suction by the use of a rubber mouthpiece attached to the cork in the mouth of the flask. With antiseptic precautions the blood can be safely drawn from a vein into the vessel.

For the most recent work on the blood platelets, Deetjen's recent study[35] may be consulted.

Whitefield[36] finds the test of Justus useful in the detection of syphilitic taint. The administration of mercury to syphilitics leads at first to a fall in the amount of hæmoglobin, but this is followed by a steady rise as the action of the mercury becomes apparent.

Sir Douglas Powell[37] has drawn attention to the fact that in rheumatism the fibrin elements are increased, the erythrocytes diminished, while the white cells are increased and the alkalinity of the blood lessened.

Forensic Aspect of Blood Investigation.—The examination of blood in medico-legal work has long held an important place. Recent work indicates fresh extensions. Strassmann and Ziemke[38] consider that for recent stains the method of extraction by means of distilled water and estimation of the hæmoglobin is the best, while for older stains, determination of the dried solids is more reliable.

In regard to the biological identification of human blood, the investigations of Uhlenhuth, Wassermann, Schutze, Stern, Mertens, A. Dieudonné, G. H. F. Nuttall, and E. M. Dinkelspiel, are of much interest. Uhlenhuth[39] injected rabbits with defibrinated cow's blood. A weak solution of cow's blood in salt solution became cloudy when the rabbit's blood serum was added. The results he considers specific, as solutions of a large series of blood from other animals caused no reaction. This biological test for human blood as elaborated by Wassermann and Schutze[40] and others, based as it is upon Bordet's investigations regarding agglutin and hæmolysin,[41] offers material for much further research.

The investigations of G. H. F. Nuttall and E. M. Dinkelspiel[42] go to show that there is a formation of specific precipitins in the blood serum of animals treated with various serums. The substance in the serum which brings about the formation of a precipitin, as also the precipitin itself, is remarkably resistant.

Fritz Reuter[43] writing on the distribution of the blood in bodies exposed to the action of heat, finds that under the influence of heat displacement of the blood which is still fluid may occur *post mortem*, causing changes in its distribution in the body, and even extravasations of blood into the tissues.

The Toxic Qualities of the Blood.—Much interest has centred around the investigations into the toxic properties of the blood. G. Rummo[44] holds that the toxic property of blood serum is due to the animal poisons which are taken up from the tissues. The toxic principles reside in the albuminous bodies of the serum, or at all events are precipitated with the albumins.

Regarding the agglutinative properties of the blood in enteric fever, reference may be made to recent work of W. G. Savage.[45]

The Bactericidal action of Blood.—A. E. Wright[46] has introduced a convenient method for measuring the bactericidal power of the blood for clinical and experimental purposes.

The investigations of L. Heim[47] would seem to suggest that while the contents of the red corpuscles may at first provide nutriment for bacteria, or at least not inhibit their development, this holds good only for a time, and later the parasites are attacked and in part succumb to some destructive agent liberated by the broken down cells.

Closely bearing on the toxic quality of the blood come the experiments dealing with the diagnostic value of the freezing point of the blood recently described by A. Korányi,[48] A. Ogston,[49] Kümmell and others. A. Ogston believes that by blood cryoscopy much

clinical aid will be afforded. So long as the blood is healthy and has its effete constituents adequately eliminated, it retains its normal freezing point, but if elimination becomes defective, the freezing point sinks. The whole subject has been well reviewed by David Wallace.

Hæmoglobin Estimation.—The various forms of apparatus in common use for the estimation of hæmoglobin are well known. Dr. Oliver's ingenious, and in its later form convenient instrument deserves special mention. G. H. Goldsmith[50] has advocated for the estimation of the hæmoglobin value of the red corpuscle: (1,) The use of Gower's hæmoglobinometer; (2,) A corpuscular count with the Thoma-Zeiss apparatus; (3,) The estimation of the percentage of corpuscles to plasma; and (4,) The count of the precipitated corpuscles and the estimation of the hæmoglobin value of the corpuscles. Goldsmith finds that in healthy subjects the hæmoglobin value is for men 117, and for women 105. The average relation of corpuscles to plasma by bulk was 37 per cent. for the healthy male, and 30·25 for the female. As a ready method for the estimation of hæmoglobin in cases of anæmia, H. F. Hewes[51] advocates the use of Tallquist's method.[52] A drop of blood is placed on a special porous paper, allowed to dry, and its colour compared with a colour table.

J. C. Muir,[53] in an interesting study of the action of arsenic on the blood, arrives at the following conclusions: (1,) That the blood of arsenical patients having deep cutaneous pigmentation is decidedly richer in red cells and hæmoglobin than that of similar slightly pigmented or unpigmented cases. (2,) That this disproves the almost universally accepted hypothesis that the pigmentation is due to destruction of hæmoglobin or red cells, and is evidence for thinking that the melanin of the skin is an important element in the production of hæmoglobin. (3,) That in human beings arsenic causes a decided erythroblastic reaction in the marrow of the long bones; that a slighter but distinct leucoblastic reaction also occurs, which may be in part or even wholly due to accompanying tuberculosis. (4,) That the erythroblastic function of the marrow is more easily stimulated in the presence of a large store of cutaneous melanin.

J. Haldane[54] has shown that hæmoglobin can be easily and accurately determined colorimetrically in terms of its oxygen capacity by means of a Gower's hæmoglobinometer, when provided with a standard solution of CO-hæmoglobin properly graduated. The average oxygen capacity of the blood in healthy adult men is 18·5 per cent., in women 16·5 per cent., and in children 16·1 per cent.

Reaction of Diabetic Blood to Anilin Dyes.—Schneider,[55] Williamson,[56] Douglas,[57] and others, have continued and extended Bremer's observation, that diabetic blood could be distinguished from normal by its different reaction with anilin dyes. This has proved of much clinical interest and value. Williamson has shown that a weak (1 in 6,000) watery solution of methylene blue, alkalinised with caustic potash and warmed, when treated with diabetic blood changes to a yellowish green, whereas with normal blood it remains of a greenish blue tint. He has recently shown[58] that the reaction is due to the excess of glucose in the diabetic blood.

Before substantial advance can be made in hæmopathology, observations are necessary respecting the various states of the blood in so-called physiological states. A. Stengel and C. Y. White[59] show that the blood in infancy and childhood presents certain important points of difference from that of the adult. In the newly born there is a greater number of red corpuscles. The hæmoglobin is also at first more abundant. During the first few hours of life the leucocytes may be as high as 20,000 per c.mm. There appears to be practically no difference in the morphology of the erythrocyte in childhood as compared with the adult. The white corpuscles show certain peculiarities, such as a greater tendency to basic staining.

Chanoz and Doyon[60] find that coagulation of the blood is accompanied by electrical phenomena sufficiently evident to be estimated.

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BRAIN (Surgery of). *Robert Abbe, A.B., M.D., New York.*
W. Scott Schley, A.B., M.D., New York.

Cerebral Injuries.—That the subject of cranial injury, in view of the immediate and particularly of the remote results, is attracting even greater interest than in former years, is evidenced by the literature of the subject during the past year. Series of collected cases with injuries to similar regions or with like results, immediate and remote, are particularly numerous. All are illustrative of the fact that too much time, care and patience cannot be spent upon the observation and study of these cases. In many cases of injury followed by the most serious results there was no fracture of the cranial bones, and often but slight external evidence upon the scalp. With such injuries intracranial hæmorrhage and brain laceration were frequently noted as immediate results ; and epilepsy, insanity, diabetes, perverted moral sense, and the subsequent development of cysts and tumours as remote results. At least two cases have been seen by the authors of this paper during the past year of fracture of the skull under a scalp wound that had been entirely overlooked. Suspicion being aroused in one case by the wound refusing to heal, an exploration showed a fracture of the outer table with a detached scale of bone. The observation of the patient in all this class of cases should extend, not over days or weeks, but over months and years, if benefit is to result or solid scientific data of value are to be gathered.

In this connection the clinical lecture of Mr. Herbert Page[1] is of interest. He believes that even concussion of any severity causes microscopic injuries to the cerebral matter, which may lead to impaired mental and physical condition later ; and for the sake of the brain itself quiet and rest for some time is necessary, particularly after accidents accompanied by loss of consciousness. Cases in which there is no obvious injury are naturally the most difficult, and the faintest clue must not escape observation ; a hæmatoma, examination of pharynx, ears and nose, subconjunctival hæmorrhage,

vomiting of blood, signs of paralysis, however trifling, the pupils, changes in the unconsciousness if it exists, and convulsive seizures, their nature and duration. He instances a typical case of difficulty in diagnosis. A patient suffering from gout and thickened arteries had had a fall and period of unconsciousness. There was no paralysis, but the patient could only with effort utter the words "yes" and "no." The question whether the condition was due to the fall, or the fall and loss of consciousness to arterial changes, was most difficult to decide. He also reports a rare case of occipital lobe injury near the calcarine fissure, in which absolute homonymous hemianopsia developed.

Wolfhagen[2] had a case of injury to the lower half of the right occipital bone, in which there was a prolonged period of unconsciousness. During convalescence there was noticed considerable loss of balancing power and incöordination of movements, although there was no diminution of muscular power. This has improved considerably, due either to compensation of the cerebrum, or to the clearing up of the cerebellar lesion. Kiliani[3] presented a case to the New York Surgical Society of subdural hæmorrhage with "free interval" of twenty-one days. There was no wound, and the patient was not even rendered unconscious by the blow, but continued his work. Three weeks later pressure symptoms began. He was operated upon thirty-six days after the injury. The trephine and Gigli saw opened a flap which disclosed a blood clot 1¼ inches thick and covering nearly the entire left hemisphere. Four hours after operation he spoke coherently, and could read well with little effort. Kiliani could find only two recorded cases of these large subdural hæmatoma. J. S. Horsley[4] records another case without fracture of the skull. The dangers of such hæmorrhage in order of their importance are: (1,) Compression of brain; (2,) Shock; (3,) Exsanguination of patient. He believes, with Phelps, of New York, that "if other intracranial injuries have been sustained which are obviously or presumably of immediately fatal character, operation will probably hasten rather than retard the catastrophe. It is only when symptoms point clearly to hæmorrhage as the essential, if not the exclusive lesion, that operation for its relief will afford legitimate hope of success." Proudfoot and Farmer[5] report a case of hæmorrhage coming from not one, but many small dural vessels. Ramsay[6] also reports a case.

Quenu and Tesson[7] mention a rare form of skull fracture which they consider a distinct type—a postero-anterior fracture of the skull due to occipital violence. The fracture began at the superior

angle of the occipital bone, to the left of the median line, and passed along the floor to the left cerebellar fossa, along the petrobasilar suture, and through pterygoid portion of sphenoid bone. But three other recorded cases exist.

Wounds of Venous Sinuses.—H. R. Wharton[8] has analysed seventy cases. These are to be classed as dangerous injuries, being followed by a high mortality from hæmorrhage and sepsis. He finds that they are of comparatively infrequent occurrence, and most frequently caused by depressed fractures. Laceration may also occur by force transmitted through cranial bones without fracture. Chipault, in 117 cases of intracranial hæmorrhage, records seventy-two from middle meningeal artery and thirty only of wounds of sinuses. Treves puts 80 to 85 per cent. of intracranial hæmorrhage due to meningeal arteries, and only 15 to 20 per cent. due to wounds of venous sinuses. In 300 cases of injury to brain and membranes, Phelps mentions but four cases of wounds of venous sinuses. Gangolphe and Pieny find the rigidity, inelasticity, and close adherence to the bone renders the sinuses very liable to tear, and prevents collapse and spontaneous arrest of hæmorrhage when wounded. Wharton found the superior longitudinal sinus injured in forty, the lateral sinus in twenty-five, the cavernous in three,* the straight in one. 35·7 per cent. recovered, 64·3 died. In wounds of the superior longitudinal sinus, 40 per cent. recovered and 60 per cent. died; of the lateral sinus, 30·7 per cent. recovered and 69·3 died; of the cavernous sinus, 33·3 recovered and 66·7 died.

In extensive wounds hæmorrhage is profuse, and may escape externally, or internally with brain compression. Septic infection is one of the greatest dangers, and many of the recorded cases died from this cause. Air embolism also is an occasional cause of death.† Marchant found the symptomatology very varied, and that rarely was the true source of hæmorrhage diagnosed before operation. We must depend largely upon the site of injury, the character of the blood escaping, and, when no external wound exists, by the slower development of the symptoms. The recommendation of Gangolphe and Pieny to trephine over the point of traumatism he regards as correct. Gauze packing was generally applicable to stop hæmorrhage; ligature is much more difficult and dangerous; forceps pressure, leaving the clamp in place, has been tried, but is not free from danger.

* Probably occurred oftener, but in association with grave conditions which masked it.

† In two cases of the collection.

G. Alexandre[9] reports a case of hæmorrhage from the superior longitudinal sinus near its origin caused by trauma. Resection of the frontal bone and tamponade stopped the bleeding.

Penetrating Wounds of the Skull.—At a recent meeting of the Paris Surgical Society this subject was discussed. Walther[10] communicated a case of penetrating wound caused by a bullet. Although there were no alarming symptoms, immediate trephining enabled him to find the ball embedded at a slight depth in the brain. Regnier and Debus considered the X-rays an essential before undertaking such an operation. Reclus further believes that if we have no radiograph, abstention should be observed until some symptom guides the surgeon, who should then content himself with free opening and removal of bone and missile. Quenu considered the ball as a septic foreign body, and favoured removal as soon as possible. He operated immediately. Tuffier considered the radioscope necessitated dangerous manœuvres when done immediately after the traumatism. It would seem that we must be guided by circumstances ; if operation is not at once imperative, it is right to try for a radiograph, as it is possible to get pictures and fluoroscopic examinations, which may be of great assistance, without moving the patient at all. The cleansing of the tract of the foreign body must naturally not be delayed many hours.

Cerebral Compression.—Crile[11] has recorded an important and suggestive series of experiments upon this subject. He found that the immediate effect of increased intra-cerebral pressure was not marked until the brain was compressed 5 to 7 per cent. of its volume. The respiratory effect was earlier noted and more pronounced than that upon blood pressure. There is first a slowing and then an arrest. Active expiration is affected, then active inspiration. The amount of pressure necessary to arrest respiration was somewhat dependent upon blood pressure. Even after arrest has occurred, with a rise in blood pressure respiratory movements may be resumed. The effect upon the heart of increased pressure was, first, slowing, and arrest later ; but if pressure was continued for any length of time, the inhibitory mechanism became exhausted, and rapid action followed. The deeper the anæsthesia the earlier the respiration failed, and conversely, when the brain was under pressure, less anæsthetic was necessary. These experimental conclusions he has verified clinically. "Whenever, as the result of hæmorrhage, abscess, depressed fracture, or other cause of increased intracranial pressure, the respiration or the circulation, or both, are modified by such pressure, it is fair to assume that the brain has been subjected

to a compression amounting to about 5 per cent. of its volume." The exceptions would be pressure exerted over a *part* of the brain representing the functions modified.

The significance of a rapid pulse alternating with a very slow pulse is that of dissolution or break-down of the cardiac centre. Operative procedures under such conditions are nearly always fatal, as the vaso-motor centre also is about exhausted. The respiratory centre is far more sensitive than the cardiac, and gives an earlier indication of trouble. Respiration may cease before surgical anæsthesia is reached. If respiration fails, the operation need not be abandoned, but the skull should be opened as soon as possible to relieve pressure, when it will almost certainly be resumed. The first effect of a blow is respiratory failure, and concussion is sometimes sufficient to arrest respiration permanently. Artificial respiration should be among the first-aid resources in brain injury. Coincidently effort should be made to increase blood pressure also. Hæmorrhage from the diploe Crile controls by pressing a 10 per cent. solution of beeswax in olive oil into the cut edges: it may be allowed to remain.

Cerebral Tumour.—There have been many interesting cases, and a few brilliant results and ingenious methods of operation recorded during the past year, but the general condition of our knowledge and success in dealing with this class of cases has not made much additional progress. Our practical knowledge of symptoms and morbid processes is receiving constant accretion, however, as experience extends. C. K. Mills[1 2] records observations upon the symptoms of tumour occurring in the sub-parietal and pre-frontal region, a number of cases having presented themselves. He finds it sometimes possible to make the diagnosis of tumour even in the absence of most of the general symptoms, such as optic neuritis, headache, vertigo, and vomiting, by the close observation of localising and invasion symptoms. Tumours of the postero-parietal region, and especially of the superior parietal lobule (Wilder's convolution), give as their most important localising symptoms disorders of cutaneous and muscular sense, especially astereognosis. Other symptoms present in these cases are the result of compression or invasion of adjoining regions. Tumours and other lesions implicating the angular gyri and sub-parietal, first temporal, and medi-occipital convolutions give as their main localising symptom word-deafness and word-blindness, with the usually accompanying speech disturbances, lateral homonymous hemianopsias, and disorders of cutaneous and muscular sense, including astereognosis. A tumour confined strictly to the motor area does not give objective sensory phenomena

of a persisting character. Tumours of the pre-frontal region (region entirely cephaled by the motor zone) chiefly give psychical symptoms of an especial character, with motor agraphia and motor aphasia if on the left side. Motor symptoms are often present late, from encroachment. He reports six cases; in all the trouble was located. In two (operated by Dr. Keen) the results were extremely good, the patient gradually regaining functions, and without recurrence up to time of writing (in one case fourteen months).

Leszynsky and Glass[13] record an unusual case with involvement of the arm and leg centres of cortex on right side, in which there never was any disturbance of speech or consciousness, and in which neither the face nor the right side of the body was ever involved. There was no defect of memory, judgment, or attention, no vomiting, headache, or vertigo, and there were no objective sensory disturbances or astereognosis. The patient began with intermittent cramps, followed by twitchings and loss of power in the left leg, and subsequently in left hand and arm. There was no skull tenderness. The pupils were equal. The patient made an excellent recovery after operation. There is still, after two years, partial hemiplegia (from destruction of cortical tissue), but the patient walks about as briskly in a straight line as the average individual, and is employed daily as an accountant.

Clarke and Lansdowne[14] report the removal of a sarcoma, with the subsequent removal of a second larger tumour at the same site. The case is of interest, as the only localising sign reported was an alteration in the percussion note over an area in the parieto-occipital region of the skull. The first tumour was an encapsulated growth $1\frac{3}{4}$ inches in diameter. Six weeks later a tumour weighing $6\frac{1}{4}$ ounces was removed by morcellation through the wound. The hemiplegia has cleared up, and the mental condition is nearly normal. Sight is impaired. Such a result seems worthy of remark. Unfortunately there are yet areas of the brain concerning whose function so little is known or ill-defined, or where the region is so inaccessible that a large number are beyond our reach at present. Dullness on percussion will be found only as a rule in such tumours as are of dense growth and some size situated near the surface.

Diller,[15] after a study of the subject, considers surgical operation permissible to relieve headache and optic neuritis and for exploratory purposes. If medical treatment has failed and the tumour is not localisable, or is localised in an inaccessible region, and headaches are extremely severe, a simple trephining operation with incision of the dura is not only justifiable, but advisable. This may relieve

headache and improve vision.* He thinks it chiefly advisable or allowable in cases of Jacksonian epilepsy, where it is not known but that a tumour is the cause of the convulsions.

Oppenheim[16] notes a class of case (six reported) presenting symptoms of Jacksonian epilepsy with monoplegia, optic neuritis, etc. indicating tumour of motor cortex. The illnesses occurred in young persons, and were recovered from with or without treatment by **Iodides, Bromides,** etc. He suggests the possible presence of a tuberculous process limited to a single portion of the brain, and unaccompanied by tubercular lesions in other parts of the body—a curable form of tubercular meningo-encephalitis ("meningite en plaque tuberculeuse").

Horsley[17] calls renewed attention to the possibility of confusing anæmia, uræmia, meningitis, and chronic abscess with brain tumour. The pathognomonic sign is that of *steady progressive* intensity in the symptoms during the weeks and months of the patient's illness. He holds that it is unjustifiable to wait until optic neuritis has developed, as we should anticipate the development of so grave a symptom. He strongly recommends operation for the relief of pressure as a palliative operation in cases of diffuse or otherwise inoperable growth. He mentions the arrest of growth and disappearance of symptoms following release of pressure in several cases (see Williamson's case). He proposes operating upon the brain by two stages, to avoid shock, and does not believe that any case should terminate fatally from this cause.

C. S. Bull reports three cases of pulsating tumour of the orbit. Two occurred spontaneously and one after severe injury. In cases similar to the last, the point to determine is whether the tumour behind the eyeball was an arterial aneurysm of the ophthalmic or ciliary arteries, or whether the injury had extended into the carotid artery and cavernous sinus. The latter is the more frequent lesion and always due to fracture at the base. Ligation of the common carotid caused subsidence of the tumour. In one case spontaneous disappearance took place after childbirth, the tumour appearing during pregnancy.

Gleevink[18] found cysticerci nine times in 1,200 brain sections. Cases of tænia solium are becoming rarer; of the nine cases four were born in the first quarter of the last century and three in or before the middle. In four no symptoms whatever were present, in one syphilis was suspected, multiple softening was diagnosed in

* *Vide sup.* case of Nicholl's.

two, and senile dementia in two. In one occasional attacks of aphasia occurred during twenty-four years. Cysticerci were found in the left third frontal convolution.

Hamilton[19] reports two cases of osteoma of the frontal sinus. One seemed to follow an injury received some years before, and reached the large size of 4½ ounces. In both the meninges were exposed, and in one destruction of the orbital roofs had occurred.

There have been very many cases reported of cerebral abscess and lateral sinus thrombosis following both middle ear and mastoid disease, in most of them with successful outcome.

Jakins,[20] in recording his cases, calls particular attention to the presence of granulation tissue or polypus in the external ear as indicative of trouble in the antrum or attic of the middle ear. In those cases of suppuration which do not readily yield to treatment, the advisability of radical operation should be seriously considered with the idea of preventing deeper mischief. Koller[21] reports a case of thrombo-phlebitis of the left sigmoid sinus completely masking an abscess in the temporo-sphenoidal lobe. The jugular vein was ligated and sinus cleaned out, but symptoms persisted, and at the second operation the abscess was found. They were secondary to a subtle chronic otitis media in which there was no drum perforation, and hardly any visible change of the membrane. There was a history of having had purulent ear discharge. He believes, with Macewen, that it may be "put down as a rule that when sinus phlebitis is complicated with either brain abscess (if not too extensive) or with meningitis, the symptoms of an infective sinus thrombosis generally mask those of cerebral abscess completely, and those of meningitis partially." This is especially true of abscess of the temporo-sphenoidal lobe.

Cerebral Abscess.—Barr and Nicoll[22] report an ingenious application of counter-drainage to a cerebellar abscess, going in through a first made opening in the mastoid and middle ear, and cutting an aperture into the cerebellar fossa through the posterior aspect of the petrous bone. The persistent discharge from the abscess soon ceased on washing through.

Sanders[23] had a case of extensive impairment of the visual fields of both eyes produced by an apparently unilateral lesion, a gunshot wound to the right occipital lobe. The abscess that resulted destroyed the anterior part of the occipital cortex on its outer aspect, the hindermost portion of the angular gyrus, and part of the white substance of the occipital lobe, including part of the optic radiation. The marked diminution in the visual fields was nearly equal and

similar on the two sides; the point of interest being the difficulty in explaining the similar impairment of both fields, and why the impairment of the right side should have been so great. Saunders thinks it tends to show that both sides of both retinæ are represented to some extent on one side of the brain.

Ballance[24] calls attention to the latent brain abscesses—those producing only general symptoms of ill-health, and none referable to the brain until excited to renewed activity by a febrile attack, a blow on the head, or by some minor operation. Such an abscess is encapsulated, but abscesses capable of producing symptoms over a considerable period of time may not be encapsulated. The non-capsulated variety, of course, tend to extend. Albutt cites a case of eight months' duration with almost total destruction of an entire cerebellar hemisphere.

Ballance prefers a $\frac{3}{8}$ inch trephine of slightly conical shape with teeth on the outside for opening the skull. In temporo-sphenoidal abscess the opening should tap the lowest part of the middle fossa to secure the best drainage. In cerebellar abscess he opens by placing trephine just touching posterior border of mastoid and just below Reid's base line; this avoids sigmoid sinus. He strongly recommends for brain exploration a long, sharp-pointed, narrow knife, instead of trochar and cannula or aspirating needle. Drainage by tubing not too frequently removed is recommended; it is to be shortened or removed only as cavity heals from bottom. The presence of hernia cerebri is considered an evidence of sepsis.

Budinger[25] records the successful transplantation of bone plates, taken from the os calcis of a freshly-amputated limb, into a large defect in the skull caused by tuberculosis of the left parietal bone. After a year, no trace of bony defect could be felt. He considers the os calcis particularly well suited for such work.

Koplik[26] has treated cerebro-spinal meningitis by repeated **Lumbar Puncture.** The operation was done only when symptoms of pressure or accumulation of exudate appeared, and was only repeated for exacerbation of the symptoms. He thought that persistent headache, somnolence, coma, delirium, and convulsions due to toxæmia and pressure were relieved for a time at least. There seemed no marked effect on the pulse or respiration even if a large amount of fluid was withdrawn. Such favourable cases are from time to time reported, but the operation has never met with favour elsewhere to the same extent as upon the Continent.

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BRIGHT'S DISEASE. *Prof. Robert Saundby, M.D., LL.D., F.R.C.P.*

Renal Percussion.—A new method of examining the kidney is recommended by Goldflam.[1] The patient should be seated, or standing with his back to the examiner, and the chest bent forward. The examiner then strikes lightly with the ulnar border of the closed fist upon the lumbar region, perpendicularly to the mass of the sacro-lumbar muscles, or slightly obliquely, so as to induce a series of shocks which, while painless in healthy persons, are distinctly painful in certain renal diseases, such as stone in the kidney, pyonephrosis, new growths, and tuberculosis. It should be added that this proceeding may be painful in the absence of any true kidney disease, but it is useful as a means of differentiation in affections of organs in the neighbourhood of the kidneys, such as biliary colic, tumour of the gall-bladder, spleen, or stomach, in none of which does this proceeding ever give rise to pain.

Estimation of Renal Permeability.—The degree of the permeability of the kidneys to certain substances affords us a ready means of estimating the functional condition of these organs. For example, a pill containing 1 grain of methylene blue, when given to a healthy person, is followed in a short time by the passage of urine which is colored deeply by the dye, and continues for a period of from twenty-four to forty-eight hours ; but Castaigne[2] has pointed out that in cases of chronic Bright's disease, considerable delay occurs before the coloring matter appears in the urine, and the elimination is continued at a slower rate so as to last over several days. According to Simonelli,[3] iodide of potassium given in gelatine capsules may also be used for the same purpose. Under normal conditions iodine is eliminated in both the urine and saliva within the first half-hour, and continues for some time, but in cases of nephritis it cannot be detected for from five to twenty hours, is passed irregularly in small

PLATE X.

but Guillian and Marie[6] have reported a case which, after having resisted all treatment, was cured at once by **Lumbar Puncture** and the removal of 6 cc. of fluid. This points to excessive tension in the cerebro-spinal fluid as the cause of the headache, and Babinski, referring to this case, has said that he believes the theory of cerebral œdema in uræmia to be partially true, and urges that trial should be made of spinal puncture in all cases of uræmia with head symptoms.

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BROMIDE ERUPTION. *Norman Walker, M.D.*

The rashes produced by drugs vary very much in different individuals. Perhaps the most constant of all, in type, are those produced by the bromides and iodides. Through the kindness of Mr. Dale James, of Sheffield, we are able to reproduce an admirable illustration of a very characteristic form of bromide rash.

The usual history of such a case is : The child is suffering from teething troubles, with perhaps slight convulsions. It is taken to a chemist, who prescribes teething powders containing bromide of potassium. Sometimes one or two doses are sufficient to produce such an eruption as that shown in *Plate X*, and the mother has often forgotten all about the two or three powders, which she gave the child, perhaps, a fortnight before the case is seen. It is therefore fortunate that the type of the eruption is so characteristic. The photograph is so clear that no description is required, and those who possess the atlas of the New Sydenham Society will notice how closely it corresponds to the case figured there.

In a case I recently saw in consultation, where the eruption was very extensive, the child had not taken altogether more than a drachm of bromide of potassium.

BRONCHITIS. *Prof. H. P. Loomis, M.D., New York.*

In epidemic bronchitis **Codeine** is a valuable remedy for the relief of the harassing pain of the cough, and when combined with one of the coal-tar antipyretics the analgesic effects become more pronounced. It is a favourite drug in the cough of phthisis and chronic bronchitis, and its sedative influence is highly satisfactory, clinical data having shown it to be the best succedaneum for opium. Another advantage of codeine over morphine, one of special value in bronchial catarrh, is that the patients not only cough less, but expectorate more easily than after morphine. The cough-dispelling power of codeine is.

such as to make it indispensable in phthisical patients, and a point of great importance in these cases is that it does not impair the appetite or digestion, and can therefore be used uninterruptedly for months.

J. Runkel[1] was led to use small doses of **Heroin** in bronchitis by the good results recorded by Strube. Runkel employed heroin in forty-five cases, most of the patients being children under two years of age. Each attack of cough became less painful and severe; its duration also was soon noticeably diminished, and the intervals between the attacks were markedly increased. Sleep was both rapidly and markedly improved. The duration of the treatment was for several weeks, and as regards the ultimate disappearance of the physical signs, in twenty-nine out of forty-one uncomplicated cases of bronchitis the results were highly encouraging; in ten the success of treatment was not so well marked as in the previous series of cases; and in two no beneficial effect whatever was noted. The remaining four cases exhibited, in addition to the bronchitic signs, all the classical symptoms of whooping-cough, and in them both the narcotic and the soothing effect of the drug was still better marked. The dose is from $\frac{1}{4}$ to $1\frac{1}{2}$ milligrms., or $\frac{1}{250}$ to $\frac{1}{42}$ grain, according to the age of the child.

The following is a very efficient combination in acute bronchitis recommended by S. O. Potter, the well known therapeutist :—

R	Ammon. muriat.	ʒj	Tr. opii camph	
	Liq. ammon. acetatis,	ʒiiss	Tr. hyoscyami	āā ʒiij
			Syr. pruni virgin	q.s. ad ʒij

M. S. ʒi. every three hours.

Thaddeus Reamy makes the positive assertion that bronchitis is not an invariable contra-indication for **Ether Anæsthesia.** His conclusions are reached from a very large clinical experience as a surgeon, and from the study of a large number of reports of cases operated on with bronchitis. At the conclusion of his report, he makes the statement that his clinical studies justify him in the belief that in properly selected cases **Ether Inhalation** is positively curative of bronchitis. That its action in these cases is largely local, he has no question.

In anæsthesia, to avoid unpleasant complications and to secure the desired results, the following points are essential: (1,) Proper preparation of the patient; (2,) Preparation of the operating-room, with a temperature of 98° to 100° F.; (3,) Pure ether; (4,) A proper inhaler; (5,) The proper methods of administration; (6,) Due caution against exposure in removing the patient from the operating-room; the temperature of the private room should not be below 80°

to 90° F. for several hours after the operation; (7,) Proper care of the patient during convalescence. She should be permitted to drink large quantities of water and should keep the bowels freely open.

Ringer and Murrell recommend very highly **Ipecacuanha Spray** in winter cough and bronchial asthma. Their manner of employment consists in spraying the respiratory passages with vinum ipecacuanhæ, either pure or diluted with three times its volume of water, using the ordinary hand-ball spray apparatus or the steam atomizer of Siegel or Richardson. The patient is directed to inhale deeply, at the same time closing the nose with the fingers. From 1 to 4 drachms of the drug is the amount sprayed at a single sitting, the patient being directed not to swallow any of the spray which accumulates in the mouth. The advantages claimed for it are that, without the internal administration of drugs, it rapidly relieves the dyspnœa and tightness across the chest, loosens the secretion and promotes expectoration, secures sleep, and shortens the duration of the disease. The amount and strength of the spray require careful regulation, as in some cases it is at first not well borne, and causes vomiting and even severe paroxysmal dyspnœa. Because of excessive arching of the tongue, some patients fail to derive much benefit. The treatment is not applicable in true asthma, the ipecacuanha appearing to aggravate this disease. It is particularly applicable in those cases giving a history of repeated yearly attacks of bronchitis, distressing dyspnœa, orthopnœa, violent paroxysmal cough, difficulty of expectoration, and sleeplessness.

M. M. Meu, of the Army Medicine Museum, recommends nascent **Ammonium Chloride** by inhalation in chronic bronchitis, and reports a very large number of cures. The method he employs is as follows: In a soup plate was poured, by guess, 3 or 4 ounces of strong sulphuric acid, and into a saucer (used to distinguish it from the acid container) was poured about 2 ounces of the strong ammonia, and immediately there was sprinkled upon the acid about a tablespoonful of common salt. In less than a minute the room was full of a dense cloud of the nascent salt, which was kept up for days by needed renewals of the charge. The patient is required to live in the room, and thus to inhale the vapour constantly till relieved.

REFERENCE.—1 *Wien. klin. Runds.*, July 22, 1900.

CANCER. *Priestley Leech, M.D., F.R.C.S.*

Dr. Nason[1] further analyses the report on 5,000 cases of death from malignant disease by a committee of the Birmingham and Midland Counties Branch of the British Medical Association. He

thinks that the following may be mentioned as some of the more certain predisposing causes :—

(1,) Prolonged local irritation, due to various causes, setting up local inflammatory changes in the irritated tissue.

(2,) The immediate or after-effects of direct and sudden injury whether mechanical, thermal or chemical.

(3,) Syphilis, and possibly other constitutional diseases which are associated with local tissue changes.

(4,) The tissue degenerations of advancing years, varying with the age.

(5,) Individual proclivity.

(6,) The presence of fœtal remnants or " cell rests."

(7,) The residence in the neighbourhood of a sodden and sewage-soaked soil.

All these conditions doubtless lower the resisting powers of the individual cells, and under such conditions the invasion of a parasitic organism would be expected to have most chance of success. If such exists, how does it gain entrance to the body? It may take place in one or more of the following ways : (1,) Absorption from the intestinal tract ; (2,) Absorption from the respiratory tract ; (3,) Direct inoculation (*a*,) through abrasion of skin or mucous membrane ; (*b*,) by the bites of blood-sucking insects.

Lange[2] reported nine cases of cancer or malignant tumour in the same family, observed by him simultaneously or at approximately the same time. Although no definite conclusions could be drawn as to the transmission of the disease from one person to another, we should bear in mind that it is not many years ago since the transmission of tuberculosis was not believed in.

Philips Lyon,[3] pathologist to the University of Buffalo, contributes an interesting and somewhat exhaustive study on the increasing prevalence of cancer in the United States, and particularly in the town of Buffalo. A study of the cancer distribution in Buffalo for the period 1880 to 1899 leads Lyon to favour the parasitic origin of cancer, and to regard it as associated with certain localities, races, and modes of life. The Italian quarters, although crowded, showed a low rate of cancer mortality. The highest cancer-ratio prevailed among the Irish population, *viz.*, 6·40 times that of the native Americans ; then came Germans and Poles, whose ratio was 4·81 ; while among the Italians it was lowest of all foreigners, *viz.*, 1·93 This lower rate would seem to be an argument against the embryonic theory of cancer, as the birth-rate and habit of nursing at the breast are greater among the Germans

than the native-born. From a consideration of habits, food, and social environment, Lyon favours the view of infection mainly from bad food as a favouring cause of cancer, as upheld by observations of Behla.[4]

Mammary Cancer.—Stanley Boyd[5] showed a female case (at the Clinical Society), aged thirty-one, whose left breast had been removed two years ago, while a year ago an operation for recurrence was attempted and abandoned. Six months ago she was very feeble and thin, with signs of recurrence, difficulty of swallowing, and paralysis of the left vocal cord. Double **Oöphorectomy** was performed; the enlarged glands had since lessened in size, the voice and swallowing had become normal, and 21 lbs. in weight had been gained. Mr. Boyd stated that the treatment had been successful only in one case (Mr. Hopkin Walters' case), in which it had been done after the menopause. The same surgeon[6] says that in cases in which complete removal of the affected area is done, prolonged relief, to say the least, is insured for 50 per cent. of the patients. No woman over thirty-five years should be allowed to remain with a doubtful tumour in her breast; in these cases the diagnosis should be completed if necessary by an exploratory incision, and the public should be educated by the profession on this subject. After an experience of fifty-six cases of inoperable mammary cancer treated by **Oöphorectomy,** he had come to the conclusion that in about one in three cases distinct improvement might be expected. In some instances the results were most extraordinary, the pain ceasing almost immediately, and the cancer nodules gradually shrinking and in time disappearing. In other cases little or no effect was produced; and between these two extremes were all possible degrees of improvement. Successful cases generally show a favourable change within a week of the operation. Even if a second recurrence took place after oöphorectomy, the patient had invariably been so much improved that she gained a longer lease of life. To patients over forty years, in whom the menopause has not occurred, and the cancer has not a very acute growth, the operation should certainly be offered, and even beyond this the same proceeding is justified. Some striking successes had been obtained in cases which at first sight had appeared most unpromising; and, on the other hand, no improvement had followed when the growth had consisted of only one or two nodules. The only absolute negative to the operation seemed to be provided by malignant growths in the viscera; for whilst after oöphorectomy cancer nodules may disappear from the skin, cicatrices, lymphatic glands and muscle, any appreciable

masses in the viscera had invariably failed to show any response. Cancer may appear in the breasts of a woman who has had the ovaries already removed (Rutherford Morison).

Morison[7] says that in carrying out **Thyroid Treatment** the doses of the extract should be increased until distinct signs of thyroidism begin to appear, but not beyond that point. There is no evidence that the treatment is of service in carcinoma of other organs.

Abbe[8] says his experience of pure carcinoma of the breast for the past fifteen years shows thirty-three cases in private and ninety in hospital practice. Of the thirty-three private cases, eighteen have been recently heard of, the results showing 25 per cent. to have reached the three-year limit, and nearly as many more to have approached it. Abbe says that it does not take more than even a few cases passing the three-year limit to inspire an operator with the great value of advanced work; such results as three years' immunity are now within the easy reach of all good operators. The surgical dissection of the extensive lymphatic involvement gives these advantages over non-operation: (1,) The pressure of the cancerous masses in the axilla and neck, producing inevitable œdema of the arm and extreme neuralgia, is not seen; (2,) The cachexia, formerly so distressing a feature of persistent absorption, is now rarely seen, even when recurrence ensues; (3,) Finally, recent experience shows that a recurrence of cancer after operation need not discourage the patient or surgeon; if it be speedily and thoroughly attended to there is still a strong probability of its eradication, as the recurrence is not a return of the disease, but a continued growth of invisible foci left at the time of operation.

Bell,[9] of Montreal, has the following apposite remarks on this subject. Every mass or growth in the breast of a woman over twenty-five years of age, which cannot be clearly diagnosed as a cyst, abscess, fibro-adenoma, or of inflammatory origin, should be looked upon as a *possible* (he would almost say probable) cancer, and special efforts should be made to come to a positive diagnosis, including an exploratory operation if necessary. A simple incision will detect a cyst or a chronic abscess, but if a simple incision does not make the diagnosis clear, remove the whole breast, with the understanding that if a microscopic examination shows it to be cancer a more extensive dissection will follow in a few days. If in serious doubt, he would not hesitate to remove the whole breast as widely as if he were sure the disease were malignant. The plan of examining frozen sections while the operation is in progress is not to be relied upon unless a positive result is obtained.

PLATE XI.

LEAF'S SUCTION TREATMENT OF CANCER.

The dotted lines show where the suction shield is applied.

PLATE XII.

LEAF'S SUCTION TREATMENT OF CANCER.

The dotted lines show where the suction shield is applied.

In spite of every precaution, there will be a certain number of women with cancer of the breast who, for some reason or other, do not present themselves for operation until the disease is far advanced, so far advanced that nothing short of removal of the upper extremity can hope to effect a permanent or lasting immunity from recurrence. Removal of the upper extremity is done for sarcoma of the upper portion of the humerus or of the scapula. He thinks he has seen several cases in which recurrence might have been averted by this means. He advises that in primary operations the operation should be proceeded with in the usual way until the exact condition of the axilla has been ascertained, and then, if necessary (the patient's consent having been previously obtained), an interscapulo-thoracic amputation, modified as regards the skin flaps, should be proceeded with. In dealing with recurrence in the axilla, a typical interscapulo-thoracic amputation may be planned from the outset. He thinks that in any case an operation for removal of cancer of the breast, should include the removal of all diseased lymphatic glands in the posterior triangle of the neck and along the subclavian vessels.

Leaf[10] writes on a new treatment for inoperable cancer of the breast, which he regards as successful; but none of the three cases treated by it under his care are perhaps altogether convincing as to its value. The principle on which the treatment is based is that of preventing by **Suction** the carcinomatous cells, or the agent which causes their multiplication, from passing along the lymphatics and invading the internal organs. He had a large vulcanite shield made by Weiss to fit accurately round the scirrhus or the recurrent nodules, as the case may be (*Fig.* 13). As large a surface as possible is included within its area. At the bottom of the shield is fitted a broad indiarubber inflatable tube exactly similar to that in an ether inhaler. The shield is provided with a small tap on to which can be adjusted an ordinary air pump, by which the whole of the air in the apparatus can be thoroughly exhausted. It is most essential that the instrument should fit accurately. By taking a wire and bending it to the exact shape required, an accurate mould of the chest wall can be taken and the vulcanite rim cut accordingly (see *Plates XI* and *XII*). There is very little pain, and if any discharge or hæmorrhage is caused the pain is as a rule materially lessened. The next point is to insist on absolute rest for the arm of the affected side. All movement quickens the lymph flow, and for this reason Leaf says that after any operation for scirrhus the patient should keep the arm in a sling for two years and not use it. If an ulcerated surface is present there will be no obstacle to the

juices and cells being drawn to the surface and being got rid of; if no ulceration is present he encourages it by boracic acid fomentations.

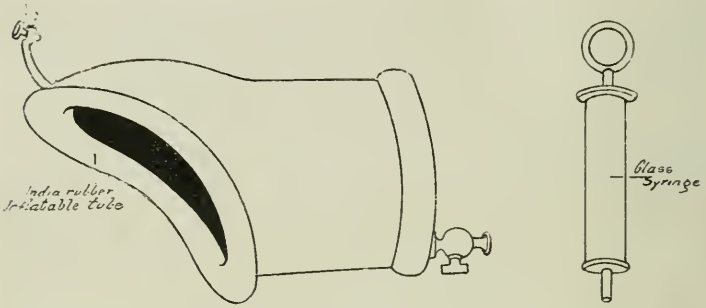

Fig. 13.—Leaf's Suction Apparatus

Mr. Leaf has used the apparatus described in three cases, but any improvement (or rather want of advance) noticed may have been due to the natural course of the disease.

Fig. 14.—Warren's Incision.

Rodman,[11] of Philadelphia, says he has rarely seen cancer of the inner half of the mammary gland that was not quickly fatal, and he looks upon the situation of the growth and the age of the patient as the two most reliable early prognostic signs. Carcinoma is rare under thirty, but when it does occur it is quickly fatal. The fatality of cancer of the inner half of the gland is due to the lymphatics draining this portion discharging along the intercostals, and perforating intercostals into the anterior mediastinum. In cases of doubtful diagnosis he gets frozen sections examined during the operation by a competent

pathologist. He thinks (and rightly so) that the manner in which the gland is removed is of some importance; it should be removed from above downwards, rather than from below upwards. The breast should be detached near the sternum first, and the dissection made towards the axilla. His conviction is that more recurrences are due to leaving infected skin behind than to any other cause. He thinks that Warren's incision (*Fig.* 14) gives a better chance of primary union without skin grafting after removal of large tumours (*See Fig.* 15).

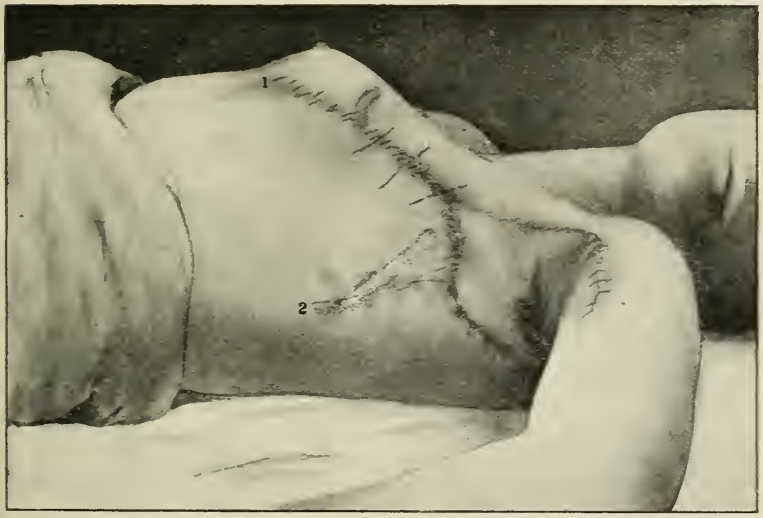

Fig. 15.—Warren's Operation completed).

Gebele[1][2] gives the results of removal of breast tumours in Angerer's clinic at Munich. From July, 1890, to May, 1899, there were 340 malignant breast tumours, of which 306 were carcinoma and 34 sarcoma. The 306 cases were seen in 260 patients; 73 per cent. were operated on; 27 per cent. were inoperable. 2 per cent. died in consequence of the operation; 56·6 per cent. died of recurrence; 6 per cent. are living with a recurrence of the disease; and 24 per cent. are living and healthy at the present time. The average age was 50·8 years if the age when the patient first came under observation be taken, and not the age when the tumour was first noticed. The poor people, who were of necessity vegetarians, formed as large

a proportion of the cases as the better-to-do, although the cancer mortality in towns (7·27 to 9·0) is greater than in the country (3·68 per 10,000 living). The influence of pregnancy and lactation as a cause of carcinoma may easily be over-estimated; not seldom does carcinoma arise from the old scar of an abscess. Traumatism has some influence. Heredity has little influence. The prognosis depends upon the extent of the gland infection; if the axillary glands are only slightly or not at all enlarged, cure may be hoped for after a radical operation. Lasting cure of carcinoma is not to be looked for simply in a radical operation, but in early diagnosis and *early* operation, as well as a radical operation.

Carcinoma of the Lower Lip.—Da Costa[13] has a good article on this subject. Cancer of the lower lip is very common, while in the upper lip it is very rare. In the lower lip it may arise from the mucous surface, or from the junction of the skin and mucous membrane. It may arise from the middle of the upper border of the lip, but more usually between this and either angle. It is more common among men than women (König says 20 to 1); more common in out-door workers and smokers; smokers of clay pipes are more liable. The short stem of a clay pipe grows hot when energetically puffed, and thus becomes dry and liable to stick to the lips, and on pulling it away a portion of epithelium is pulled with it. Most habitual smokers invariably hold the pipe in the same place, and hence the epithelium of one region may become abraded scores and hundreds of times, until the area becomes chronically irritated, and finally cancerous. This explains the frequency among men and out-door workers. It may arise from a papilloma, an area of eczema, a spot of herpes, the margin of a scar, and not infrequently from a neglected irritation, ulcer, or fissure. An ulcer or a fissure with a hard edge should always excite anxiety, and ought always to be excised if not due to syphilis. It is most common between the ages of fifty and sixty. The younger the patient the more malignant the growth. The growths of least malignancy start at the skin margin, and the growths of greatest malignancy are apt to arise distinctly from the epithelial surface.

The cancer may appear first as: (1,) A fissure with hard edges which will not heal; (2,) A slowly-developing ulcer with hard edges, which refuses to cicatrise; (3,) As a hard papule in the mucous membrane which does not ulcerate for a considerable time; (4,) As an eczematous-looking surface which weeps and crusts, and is covered with papillomatous projections. The first three forms spread deeply under the epithelium and involve the muscle of the lip comparatively

early; the last-mentioned form is superficial, and does not involve the muscle until late. The first three forms are more malignant than the last form. The sooner the muscle is involved the more malignant is the growth; whenever there is involvement of muscle there is rapid dissemination of cancer cells. Sometimes growth exceeds ulceration, when masses of epitheliamatous growth form. The application of caustics to an epitheliomatous ulcer usually causes it to spread with great rapidity.

The rapidity of involvement of the glands varies with the malignancy of the growth. In many cases the glands are involved ten or twelve weeks after the beginning of the growth; absence of enlargement of glands is not proof that they are not involved.

Duration of cancer of lip when not operated on has been variously estimated: König, one to four years; the elder Senn, three to five years. Death occurs from broncho-pneumonia due to inhalation

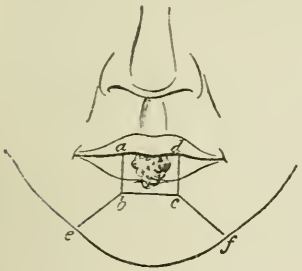

Fig. 16.

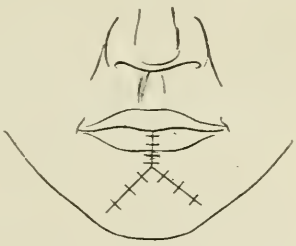

Fig. 17.

of septic material, exhaustion, hæmorrhage, or very rarely from metastasis. The number cured by a thorough and radical operation (three years' limit as a guide) is variously estimated at from 40 to 60 per cent. Eighty per cent. of all recurrences take place within the first year after operation. The only sound treatment is removal by the knife, with removal of the anatomically related lymph glands. The surgeon should always assume that the glands are diseased, for they are infected early, and long before they can be palpated. In the lip the incision must be at least $\frac{1}{4}$ of an inch wide of any detectable induration. The operation may be done under local anæsthesia; the lip may be removed by a V-shaped incision, by a semilunar cut, or by a quadrilateral incision. Remove glands and growth at the same time if possible. The operation he performs is that of W. W. Grant[14] (*Figs.* 16, 17); the lower incisions, *be*, *cf*,

are prolonged into the neck, in order to reach the glands under the jaw. There are three localities beneath the jaw where glands should be looked for: (*a*,) Above the anterior part of the sub-maxillary gland; (*b*,) The space between the anterior bellies of the two digastric muscles; (*c*,) Beneath the border of the lower jaw in the region about the posterior portion of the sub-maxillary salivary gland. If the sub-maxillary lymph glands are obviously diseased, explore along the internal jugular vein and remove the glands there. *The rule to follow is to clear the first three mentioned regions of fat and glands, whether enlarged glands can be palpated or not.* It is probably best to remove the sub-maxillary salivary glands, because these glands contain lymphatics, and are liable to become infected. If the lip is extensively involved it must be entirely removed and a new lip constructed, either from the cheeks, or from the upper lip and from the tissues beneath the jaw. When the glands are extensively involved operation is hopeless, or well nigh hopeless; and when the jaw-bone and the floor of the mouth is involved operation is absolutely useless. To sum up, extirpate every sore which does not heal, particularly if it has a hard edge; operate as early as possible after cancer begins; operate radically, and always remove the anatomically related lymph glands and the sub-maxillary glands.

See also "Stomach," and "Uterus."

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CANCER OF THE SKIN.

Norman Walker, M.D.

Fordyce[1] describes the varieties of cancer of the skin at its early stages, and in a paper illustrated by photos and micro-photos shows how important it is that these should be removed at an early and comparatively benign stage. His description of the small, hard, yellowish-white or pearl-gray nodules which exist with more or less frequency on the faces of middle-aged individuals, should attract attention, lead to their early removal, and save many an elderly man from much pain and misery.

The treatment of cancer of the skin is not so simple as a few years back, when the knife was the only reputable means of treatment. Unna,[2] Trunecek,[3] and many American dermatologists, Robinson,

Sherwell, and others, have published papers lauding the application of **Arsenious Acid** and other caustics. It is, of course, an old cancer cure revived, and the secret of success lies in its thorough application. It is unnecessary to go over each paper in detail and to give the particular formula preferred by each. Equal parts of arsenious acid and powdered acacia may be made into a paste with water, and a useful addition, as tending to diminish pain, is **Orthoform.** This is applied to the raw surface and covered with some simple dressing. The pain is very great, and it may be necessary to keep the patient under the influence of morphine. The arsenious acid seems to have, as suggested by Robinson, an almost selective action upon the cancer cells, and there is no denying the fact that the scar resulting from the successful treatment of such a case is much more satisfactory than that resulting from excision. At the same time it is a dangerous remedy in timid hands. The patient's bitter complaints of pain are apt to weigh with the tender hearted, and if the application is removed too soon, more harm than good will result.

The caustic treatment has not had things all its own way. Finsen had treated several cases, some unsuccessfully, some with partial success, and others with complete success by his **Light** method ; but it was reserved for a British observer to discover what has been the most remarkable event in the treatment of cancer for many a long day. Like many other discoveries, it was partly accidental. Mr. J. Hutchinson, junr., sent for treatment to the Finsen department of the London Hospital a case of rodent ulcer. The treatment was so painful that it occurred to Dr. Sequeira to commence the treatment with the application of the **X-rays.** The beneficial result was astonishing, the ulcerated surface healing up rapidly. Since the publication of his case[4] the treatment has been tested all over the world, and good results have everywhere been obtained. In non-ulcerated cases the rays seem to bring about a destruction of cancerous tissue, and the nodule is converted into an ulcer which gradually heals with a sound scar. It is not in the more limited cases, which may be treated satisfactorily with other methods, that the real benefit of the X-rays lies, but in those extensive destructive cases which have advanced beyond the reach of the knife. Under daily exposure to the rays the ulcers contract and gradually heal up with a sound scar, and often a surprising levelling up of the cavity.

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CASTRATION. (See "Testis.")

CATARACT. *E. H. Holthouse, M.B., F.R.C.S.*

Secondary Cataract.—The trouble caused by the formation of secondary cataract is but too well known to all surgeons familiar with the operation of extraction. It is only in a small proportion of cases that it does not arise. The origin of it is usually stated to be the thickening and opacification of the lens capsule by proliferation of the epithelium and, sometimes, by iritic exudations. By a long series of observations on the eyes of rabbits, W. H. Bates[1] has been led to a very different conclusion. He says that he did not find on a careful microscopic examination that secondary cataract was ever due to the opacity or thickening or wrinkling of the lens capsule, but that he has been able to trace, step by step, the formation of a connective tissue membrane veiling the pupil. This connective tissue membrane owed its existence to fibrinous fluid which took the place of the aqueous tumour as soon as the latter was evacuated. In thirty-one eyes enucleated from three days to two weeks after extraction of the lens, there were present in addition to, but closely associated with more or less fibrin, scattered connective tissue cells, or, in the later periods, well-organized connective tissues. After two weeks new connective tissue had largely replaced the fibrin in forty-three eyes examined. The posterior capsule was always thrown into folds, but in no case was it found opaque or thickened. The capsule was not necessary to the formation of these secondary cataracts, because similar connective tissue membranes formed in the pupillary area after the posterior capsule was incised and rolled up behind the iris, and also after removal of the lens in its capsule. The anterior capsule did not form part of the central pupillary membrane, but was usually found behind the iris.

The mode of formation of secondary cataract in the rabbit is briefly described as follows: The repeated evacuation of the anterior chamber during the operation for extraction of the lens is followed by the formation of fibrin in the anterior chamber and in the pupillary area, in and about which the connective tissue develops which forms the secondary cataract. It is probable that the fibrin acts as a nidus for the development of new connective tissue, and that the formation of secondary cataract is accomplished in the same way as the organization of a thrombus. Similar membranes could be produced at will in normal eyes without extraction of the lens, by repeated evacuation of the anterior chamber with a hypodermic syringe. It was noticed further, that after extraction of the lens, if the fibrin was large in amount the secondary cataract was

thicker and denser than when the fibrin was present in smaller quantity. When little or no fibrin appeared after the operation, secondary cataract did not follow. Bates performed a number of experiments in the endeavour to find some means of prevention or repair of secondary cataract: (1,) As to the source of the fibrin-forming fluid, the conclusion arrived at was that it comes not in any considerable quantity from the cornea, but chiefly from the blood-vessels and lymph spaces of the iris and ciliary body. Though it could be obtained without appreciable congestion of these organs, the absence of certain inflammation phenomena was not proved. (2,) To prevent the formation of fibrin, various substances which prevent the coagulation of the blood were injected into the anterior chamber. The experiments were only partially successful, normal saline solutions giving the best results, but delaying the formation of fibrin less than thirty minutes. (3,) Attempts to remove fibrin already formed were not successful, both solvents and mechanical measures inducing inflammation. But encouraging results followed efforts to hasten the absorption of fibrin by subcutaneous injections in the animal of large quantities of water. (4,) When the anterior chamber was filled with normal saline solution immediately after evacuation of the lens, and the wound closed with sutures, no fibrin-forming fluid appeared, the pupil remained clear, and no secondary cataract developed.

As a result of these experiments, Bates draws the conclusion that secondary cataract in the human subject may presumably be prevented by similar measures, *viz.*, refilling the anterior chamber with **Normal Saline Solution** directly after removal of the lens, and quickly closing the corneal wound by sutures. The use of sutures after cataract extraction was discussed in the *Medical Annual* for 1901 (pp. 172-3).

Spontaneous Disappearance of Senile Cataract.—This question has been well reviewed by Treacher Collins[2] in discussing an article by Walter L. Pyles.[3] The latter described the various ways in which spontaneous disappearance of senile cataract may occur, with the report of a case which came under his own observation. A careful digest of the literature upon the subject led him to classify the recorded cases as follows: (1,) Cases in which there was absorption after spontaneous rupture of the anterior or posterior capsule; (2,) Cases in which there was spontaneous dislocation of the cataractous lens; (3,) Cases in which there was intracapsular resorption of the opaque cortex and sinking of the nucleus below the axis of vision, after degenerative changes in Morganian cataract,

without rupture or dislocation of the lens ; (4,) Cases in which there was complete spontaneous resorption of both nucleus and cortex, without reported history of ruptured capsule, dislocation, or degenerative changes of the Morganian type ; (5,) Cases of spontaneous disappearance of incipient cataract without degenerative changes or marked difference in refraction.

Pyle considers his own case as belonging to the fourth class, but the evidence that there was absorption of the whole cataractous lens without rupture of the capsule is not regarded by Mr. Collins as absolutely conclusive .On the other hand two cases described by A. von Reuss[4] are accepted as apparently belonging to the third of Pyles' classes, there being no real reason for supposing that the capsule had been ruptured. The possibility of this occurrence, though rare, is certainly one to be borne in mind by ophthalmic surgeons.

REFERENCES.—[1]*New York Med. Jour.*, July 7, 1900 ; [2]*Pract.*, Nov., 1900 ; [3]*Phil. Med. Jour.*, March 17, 1900 ; [4]*Cent. f. prakt. Augenheilk*, Feb., 1900.

CAUTERIZATION BY HOT AIR. *Priestley Leech, M.D., F.R.C.S.*

Schwabe[1] of St. Petersburg, has constructed an apparatus for the application of hot air in cauterization. It is practically identical with Paquelin's cautery, except that the platinum end is spherical, and terminates in a thin open beak. There is a second rubber tube running parallel to the usual tube connecting the platinum tip with the air bulb, and not going through the benzine bottle. When the bulb is compressed, part of the air goes through the benzine, and renders the tip incandescent, while the rest of the air passes along the second tube directly to the tip, where it is heated to a degree corresponding to the heat of the tip (probably about 300° C.), and escapes in a thin stream from the beak of the platinum tip. He has used this apparatus in several cases, and has also used the direct solar rays for cauterizing. He has found these methods superior to the ordinary thermo-cautery and actual cautery, because they destroy the vitality of tissues by simply drying them up, without charring or breaking them down mechanically. While using the lens for cauterising with the solar rays it is best to wear smoked glasses, as the focussed rays are too bright for the unprotected eye of the operator. The rays may first be accurately focused on a piece of cardboard, which is placed over the tissue to be cauterised, and then removed. At first the spot becomes white, then light grey, and finally it begins to char and steam. The light grey stage is sufficient for tissues that are not very thick.

REFERENCE.—[1]*New York Med. Jour.*, April 18, 1901.

CHAPPA. *James Cantlie, M.B., F.R.C.S.*

E. H. Read[1] observed in Lagos amongst the Popo people a peculiar affection of the joints, to which he gives the native name of Chappa. The disease commences with severe pains in the limbs, muscles, and joints. After a few months the pain decreases, and some joints begin to swell and convey the sense of fluctuation. Nodules appear in different parts of the body in the subcutaneous tissue, and without the formation of abscess the skin over the nodule ulcerates, and exposes a circular or oval ulcer with a fatty-looking base. Sometimes the nodules are absorbed without ulceration. The joints most frequently affected are the knee, elbow, and wrist. The disease, after a time, attacks the bones, and the joints become thoroughly disorganised. Treatment proved of no avail. In Fiji, Sir Wm. MacGregor is reported by Read to state that he had seen similar affections, except that the bones did not become affected.

REFERENCE.—[1] *Jour. Trop. Med.*, Oct. 15, 1901.

CHEILITIS. *Norman Walker, M.D.*

Hartzell[1] reports the case of a middle-aged female much troubled by constant exfoliation of the mucous membrane of the lower lip, which for three years had been desquamating in large flakes ; and also the case of a man, aged twenty-seven, for whom, believing the affection to be due to some disease of the teeth, he prescribed a mouth-wash of **Chlorate of Potash**. In ten days the lips were perfectly well. The same wash was tried in the case of the woman, but without success.

In the discussion of this paper Hyde reported two cases which presented some points of resemblance. The first was that of a young woman who had this condition of exfoliation, and who afterwards died of tuberculosis. He believed that it was a form of tuberculosis. Another case also occurring in a young woman he believed to be of the nature of lupus erythematosus of the lips. That it was not due to any disease of the teeth, was shown by the fact that the same process involved both nipples.

Morrow had seen similar cases, which he regarded as a form of seborrhœa of the lower lip. Crusts formed, and when detached left slightly bleeding points. The treatment he employed was the vigorous application of **Green Soap,** followed by an ointment of 2 to 4 drachms of **Nitrate of Mercury Ointment,** to an ounce of zinc ointment. When the lip began to improve it was painted with **Tincture of Benzoin.** Both his cases recovered.

Corlett had recently had under his care a young lady suffering

from persistent scaling of the lips. Apart from a general tendency to seborrhœa, he could find nothing to account for the condition.

Gilchrist reported that in two similar cases which had come under his notice, he was able to excise a portion of the lip, and found on examination what appeared to be sebaceous glands in the mucous membrane. These have been recognised by several observers in America and Europe, and Gilchrist suggested for the disease the term of *seborrhœa mucosa*.

[Little reference was made to treatment in this discussion, but I can confirm what was said by Morrow, that active remedies are required, and that the mild measures generally prescribed are practically useless. I have seen great improvement result in cases of years' duration, from repeated painting of the lip with pure **Carbolic Acid.**—N. W.]

REFERENCE.—[1] *Jour. of Cutan. and Gen.-Urin. Dis.*, Aug., 1900.

CHLOROSIS. *T. N. Kelynack, M.D., M.R.C.P.*

The precise pathology of this affection still remains unknown, although the clinical manifestations are daily presented to the observation of almost every practitioner. This lack in knowledge of the true etiology and nature of the morbid condition leaves treatment in great measure empirical and symptomatic.

For recent descriptions of chlorosis the readily accessible articles in various text-books by Clifford Allbutt, Byrom Bramwell, Sidney Coupland, W. Osler, and F. Taylor, should be consulted. Much remains speculative in regard to its pathology. If practical results are to be attained, clinical facts and the results of scientific researches must harmonise. The recent work of Haldane and Lorrain Smith,[1] Lloyd Jones, Biernacki, and others has tended to enlarge our views as to the pathology of chlorosis, and gone far in affording a basis for satisfactory treatment.

Many still believe in the great importance of deranged genital functions in the production of a disordered nutrition, and consequent or associated blood changes. Castellino[2] after discussing the results of the researches of Virchow, Quinquand, Hayem, Maragliano, Landois, Daremberg, Panum, and others, concludes that chlorosis is a primary lesion *sui generis*, characterised by a red corpuscle defective in development. Riva contends that the alteration of the chlorotic corpuscle is of the nature of a bio-chemical modification, whereby it is no longer capable of charging itself with iron and producing hæmoglobin. R. Wybauw[3] in a paper on the limits of heart dulness in cases of anæmia and chlorosis, shows that whatever

is the essential cause of chlorosis, it is a fact that the cardiac muscle tends to lose its tonus, and consequently dilatation readily occurs; and it may be also, as Clax thinks, that in chlorosis there is a general infiltration of the tissues by effused blood serum.

J. G. Emanuel[4] shows that in chlorosis the red corpuscles are uniformly pale and small; leucocytosis is rare; the lymphocytes are generally increased (relatively to the polymorphonuclear); normoblasts are rare; and the average blood count may be expressed:

R.B. Cps., 4,000,000 = 80 per cent.

W. Cps., 7,000 { Lymphocytes—increased relatively. Poly. Neuts —diminished relatively.

Hæmoglobin, 40 per cent.

Full details as to the best methods of examining the blood of chlorotics are given by C. E. Simon.[5]

Clifford Allbutt[6] in opening a discussion on the treatment of anæmia at the British Balneological and Climatological Society,[7] showed that on scientific grounds it would seem that the therapeutical purpose in chlorosis should be to diminish the excess of plasma. This would point to the desirability of sending chlorosis cases to dry climates, whether high or low, when by transpiration the bulk of the circulating fluids may be reduced. Dr. Allbutt also suggested that hæmolytic anæmias, which are most or all of them toxic, may be advantageously treated by open air, especially in high altitudes.

In this connection reference may be made to the very interesting and valuable observation of George Oliver[8] on the blood and blood pressure in persons living in high alpine resorts like Davos. His conclusions seem to show that the apparent number of red corpuscles varies, as the bulk of plasma varies, with the varying humidity of different climates, and even of the same locality.

Lawrence Humphry[9] believes much benefit will accrue from the adoption of open-air treatment not only in simple anæmia, but in cases of pernicious and other forms of toxic anæmia. Ewing[10] gives a useful bibliography of chlorosis. For particulars regarding treatment see "Anæmia."

REFERENCES.—[1]*Jour. of Phys.*, 1900; [2]*Brit. Med. Jour.*, Nov. 11, 1899; [3]*Lancet*, Oct. 6, 1900; [4]*Birm. Med. Rev.*, June, 1901; [5]*A Manual of Clin. Diag.*, 3rd edit., 1900; [6]*Jour. Baln. and Climat.*, April, 1901; [7]*Lancet*, Feb. 16, Mar. 30, 1901; [8]*Blood and Blood Pressure*, 1900; [9]*Lancet*, March 9, 1901; [10]*Clinical Pathology of the Blood*, 1901.

CHOREA. *Henry Dwight Chapin, M.D., New York.*

Dr. W. Gordon[1] calls attention to a peculiar modification of the knee-jerk very common in chorea. With the patient recumbent, if one raises the knee, allowing the heel to rest on the couch, making sure that all the muscles of the limbs are relaxed for the time being, and if one then tests the knee-jerk in the usual way, the foot is found to rise more or less smartly, but, instead of falling back immediately, it remains suspended for a variable time—hung up as it were—and then slowly sinks back to its initial position.

There are also variations. Sometimes the peculiarity amounts merely to a sluggish descent following an ordinary ascent, sometimes an ordinary knee-jerk is obtained, but just as the foot is beginning to fall again, it is caught in mid-air—is, as it were, hung up by afterthought—and held for a time or even raised to a higher level than that reached in the first jerk. Sometimes the knee-jerk passes at once into an active, more or less persistent—even apparently voluntary—rigid extension of the limb. And between all these varieties there is every gradation.

REFERENCE.—[1] *Brit. Med. Jour.*, March 30, 1901.

CIRRHOSIS OF LIVER. *R. Hutchison, M.D.*

ETIOLOGY.—William W. Ford[1] has written an important paper showing that obstruction of the bile duct is apt to be followed by a secondary cirrhosis of the liver (obstructive biliary cirrhosis). He analyses previously recorded cases, and shows that the chief causes of the obstruction are, in order of frequency: (1,) Congenital obliteration of the bile ducts; (2,) Gall stones; (3,) Cancer of the head of the pancreas; (4,) Enlarged glands in the hilus of the liver. The liver in these cases of obstructive cirrhosis is greatly enlarged, with a rough, jaundiced surface, and considerable peri-hepatitis. In the later stages the liver is apt to assume the true atrophic type of Laennec. Microscopically the bile channels are dilated, and there is an increase of fibrous tissue which may be either interlobular, intralobular, or pericellular in type. New bile ducts are usually a prominent feature in sections. The mode of production of the cirrhosis in these cases is discussed in detail, and experiments are quoted which show that mere obstruction to the flow of bile can of itself cause cirrhosis of the liver, without there being any bacterial infection of the bile channels.

Obstructive cirrhosis may be mistaken for the hypertrophic cirrhosis of Hanot. The author gives the following tabular statement of the distinguishing features in the two diseases :—

SYMPTOM-COMPLEX OF HANOT'S CIRRHOSIS, AND OBSTRUCTIVE BILIARY CIRRHOSIS.

SYMPTOMS.	HANOT'S CIRRHOSIS.	OBSTRUCTIVE CIRRHOSIS.
Course of disease	Chronic	Acute
General health	Good	Poor
Emaciation	Slow	Rapid
Loss of weight	Slow	Rapid
Intermission of symptoms	Common	Does not occur
Fever	Common	Rare
Anorexia	Rare	Common
Good appetite	Common	Rare
Vomiting	Rare	Common
Jaundice	Slight at first, increasing	Deep from the first
Clay-coloured stools	Rare	Constant
Bile-stained urine	Common	Constant
Enlargement of liver	Common	Common
Contraction of liver	Rare	Common
Ascites	Rare	Common
Œdema of extremities	Rare	Common
Caput medusæ	Rare	Common

TREATMENT.—The treatment of cirrhosis has been dealt with recently by Cheadle in the Lumleian Lectures delivered before the Royal College of Physicians. Cheadle emphasises the value of repeated **Tappings,** as tending not only to relieve the symptoms, but actually to promote a cure. The **Diet** should be easily digested and unirritating, alcohol, spices and all stimulating articles being avoided. Rich foods and those which tax the liver in their digestion should be eschewed, and the patient should be required to live upon simple proteids, toasted bread, fresh fruits, and green vegetables. Mild **Purgatives** may be given, but Dr. Cheadle is strongly opposed to the use of drastic cathartics in this disease. **Mercury and Iodides** are of use, particularly in syphilitic cases, and should always be given where there is any suspicion of a syphilitic taint; **Digitalis** is of value in cardiac embarrassment, and in aiding the re-establishment of the circulation.

Plicquet[2] recommends the use of **Arsenic** in cirrhosis. Intestinal antisepsis, the maintenance of which is very important, should be attained by mild remedies, such as charcoal and magnesia. If there is much intestinal fermentation it may be necessary to give **Naphthol** or **Salicylic Acid** guardedly. In certain cases, where there seems to be little bile in the stools, frequent doses of **Calomel** are useful, as they will act as a gastro-intestinal antiseptic and diuretic. The dose

may be $\frac{1}{4}$ of a grain a day for two or three days at a time. Great care must be taken to avoid mercurial stomatitis, which is apt to be severe in cirrhotic patients, and it is well to see that the patient rinses his mouth thoroughly, using a wash containing chlorate of potash.

Bowles[3] records a case of cirrhosis in which most of the symptoms disappeared when the patient was under treatment by 5-drop doses of fluid extract of **Apocynum Cannabinum** thrice daily.

Fatal Hæmorrhage in Cirrhosis.—Preble bases the following conclusions upon an analysis of sixty cases: (1,) Fatal gastro-intestinal hæmorrhage is an infrequent, but not rare, complication of cirrhosis of the liver; (2,) In most the cirrhosis is atrophic, but it may be hypertrophic; (3,) In one-third the first attack is fatal; n two-thirds the hæmorrhages continue at intervals over a period varying from a few months to several years; (4,) In one-third the diagnosis can be made at or before the first hæmorrhage; (5,) Œsophageal varices are present in 80 per cent. of the cases, and in more than one-half of this 80 per cent. the varices show macroscopical ruptures, and it is probable that many other ruptures would be found if the varices were tested by injection of air or fluid; (6,) Fatal hæmorrhages occur in cases which show no œsophageal varices, and they are probably due to the simultaneous rupture of many capillaries of the gastro-intestinal mucous membrane; (7,) The hæmorrhages in this class are usually preceded by other symptoms of cirrhosis, but the first symptom may be a fatal hæmorrhage; (8,) In 6 per cent. only of the cases which showed œsophageal varices was the cirrhosis typical, *i.e.*, showed ascites, enlarged spleen, and subcutaneous abdominal varices.

REFERENCES.—[1]*La Pres. Méd.*, Jan. 13, 1900; [2]*Therap. Gaz.*, Feb. 15, 1901; [3]*Amer. Jour. Med. Sci.*, March, 1900.

CLEFT PALATE. *Keith Monsarrat, F.R.C.S.E.*

Time for Operation.—Wolff[1] argues strongly in favour of early operation, and brought before the "Freie Vereinigung" of surgeons in Berlin a number of cases in support of his opinion. In opposition to the practice of most surgeons, he holds that the operation is less severe in young infants than in older children, that there is less hæmorrhage, and less difficulty in freeing the involucrum palati. Since 1872 he has operated on 311 cases of cleft palate, the last half of which show a much better record than the first. The mortality in children operated on in the first six months of life has in his hands been 10·5 per cent., which he considers much less than the mortality of cases which are left alone. He considers early operation

a life-saving procedure, and has found that later the patients speak naturally, which has an important effect on their mental development. In none of his cases did he find any defective development of the face and upper jaw as a result of the early operation. Delbet,[2] on the other hand, holds that atrophy of the upper jaw is a frequent sequel of operation in the early months, and that the phonetic results are no better than those obtained by operation in the sixth or seventh year. The large experience of Wolff must add weight to his opinion, and he has in a way opened the question of age anew. His statistics up to the end of the second year are as follows :—

AGE.	NUMBER.	MORTALITY.	UNDER 6 MONTHS.	DEATHS.
2 months	14	2	38	10·5 per cent
3-4 ,,	14	1		
5-6 ,,	10	1		
			6 MONTHS TO 2 YEARS.	
7-11 months	9	0	29	3·4 per cent.
12-17 ,,	12	0		
18-23 ,,	8	1		

The mortality of unoperated cases of cleft palate during the first year is undoubtedly very high, though the estimation of Gustav Simon (90 per cent.) is excessive. It is certainly far greater than 10 per cent. ; and if the mortality of operated cases within the first half year can be kept at about this figure, then lives are certainly saved.

Mr. Arbuthnot Lane[3] agrees with the principle of early operation, and considers that " no time whatever should be lost in restoring to the nose its normal physiology." He recommends operation during the fourth or fifth week, and finds that the child bears the operation very well, experiences but slight discomfort, and will take food within an hour or two of the operation. The amount o hæmorrhage is slight and easily controlled.

Kirmisson[4] is a partisan of the late operation (about the age of five or six years). He says : " The operation undertaken under the age of two years appears to us very difficult and full of danger in view of the scantiness and delicacy of the parts involved, the hæmorrhage, and the impossibility of taking at this age sufficiently careful antiseptic precautions."

Technique.—Wolff (*loc. cit.*) advises operation in two stages. He first forms and frees the lateral flaps, and about a week after proceeds to suture them. Lane (*loc. cit.*) recommends a procedure which is a modification of the Davies-Colley operation, the raising of a flap of periosteum and mucous membrane from one side, and the securing of it under the separated margin of the other side. Lane recommends

the use of special small needles and a special needle holder. The dotted lines (*Fig.* 18) indicate the incisions, and the shaded area the portion of muco-periosteum elevated from the subjacent bone. In dealing with the soft palate the posterior surface on the side opposite to that from which the reflected flap is taken, is rawed in the manner shown in *Fig.* 19. Care must be taken not to separate the reflected flap from its attached edge at the margin of the gap.

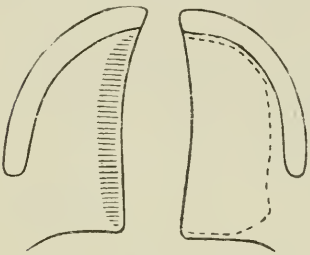

Fig. 18.

E. Owen[5] has recently shown how, when primary union fails to occur, a very satisfactory result may be obtained by operating while the flaps still show granulating surfaces. The marginal granulations are to be freshened up, and the flaps brought together again. It is not necessary when a first operation breaks down to put off a second until the parts have healed. Owen recommends the head-down position.

The same position is also preferred by Von Eiselberg.[6] He employs the Dieffenbach operation (division and displacement inwards of the bony palate) with Billroth's modification (chiselling out of the median plate of the pterygoid process of the sphenoid).

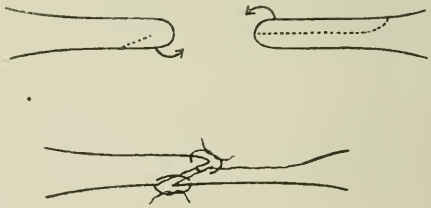

Fig. 19.

Even this radical procedure he has not found sufficient for the closure of large gaps, and has carried out the following atypical procedures: (1,) Transplantation of a granulating flap from the forearm; (2,) Covering of the anterior part of a cleft by splitting off the mucous membrane of the vomer, bringing the flap round to a transverse position, and stitching it to the previously rawed edges of the cleft; (3,) Separation of a flap from the whole of the vomer.

In a discussion on Von Eiselberg's paper, Wolff thought that such procedures might be of use in cases where an operation for closure failed, and large portions of the soft tissues of the palate were lost by sloughing; but in all cases not previously submitted to operation, he had found that the cleft could be closed from the palatal

tissues themselves. He also said that after having separated the lateral flaps with the rugine, he was in the habit of passing the little finger underneath them, and breaking down with it all remaining adhesions; if this were done he had found that such a procedure as Billroth's was unnecessary. Most English surgeons detach the muscular and tendinous structures from the hamular process by scissors or raspatory introduced through the incisions.

REFERENCES.—[1]*Samml. klin Vorträge*, No. 301, 1901; [2]*Leçons d. Clin. Chir.*, Paris, 1899; [3]*Lectures*, 2nd Ed., March, 1900; [4]*Traité des Malad. Chir. d'Orig. Cong.*, 1898, p. 131; [5]*Brit. Med. Jour.*, Nov. 5, 1898; [6]*Cent. f. Chir.*, No. 29. 1901.

COLITIS. (See "Membranous Colitis").

CONJUNCTIVA, (Affections of). *E. H. Holthouse, M.B., F.R.C.S.*

Phlyctenular Disease of the surface of the eyeball has long been considered to be eczematous in its nature, a doctrine strongly held by E. Donaldson[1] (Londonderry). Whilst allowing for other factors in bringing about the condition, he draws attention especially to the influence of climate, hot and cold weather. Sydney Stephenson[2] goes further, and insists, not merely on the eczematous character of the eruption, but on its origin in the tuberculous diathesis. Both observers state that eczema of other surfaces may be present, and should be looked for.

At a time when the identity of human and bovine tuberculosis is being questioned, it should be noted that Birch-Hirschfeld and W. Hausmann[3] have reported three cases of *conjunctival tuberculosis*, one of which was contracted from milking a tuberculous cow. The importance of bacteriological diagnosis in cases of conjunctivitis, and especially the value of such diagnosis early in the disease, when the inflammation is not yet far enough advanced to enable the physician to distinguish what variety of conjunctivitis he has to deal with, is emphasised by G. Gonsalvo,[4] who studied an epidemic of *pneumococcic conjunctivitis* which occurred in Vittoria in 1899. On bacteriological examination he found, in some cases, the bacillus of Koch and Weeks, and in others the pneumococcus. He draws the following conclusions: (1,) Pneumococcic catarrhal conjunctivitis is a contagious affection which occurs endemically or in epidemics, attacks individuals at all ages, and usually runs an acute course of about ten days' duration, but may become chronic. It is of a rather benign nature, and rarely affects the eye itself. It is produced by Fraenkel's pneumococcus. (2,) The cases observed by the writer during the aforesaid epidemic were essentially cases of the pneumococcic variety of conjunctivitis.

Walter Pyle[5] (Philadelphia), states that the milder cases of acute catarrhal conjunctivitis are caused by the diplococcus of Fraenkel, the diplo-bacillus of Morax, the pus cocci, and other bacteria, whilst the severer form is the result of infection by the bacillus of Koch and Weeks. In respect of treatment Pyle prefers the application of a 50 per cent. solution of **Boroglyceride** in glycerin to that of silver nitrate, as being generally quite as useful and often more effective in shortening the course of the inflammation. It can also be safely used by the patients themselves, and has none of the objectionable sequelæ of the other remedy. **Protargol** in solutions varying in strength from 5 per cent. to 20 per cent. he considers less effective than silver nitrate, but suitable for the patient's use at home. He doubts whether zinc chloride has the specific effect in these cases first claimed for it.

Conjunctival Asthma is the name given to a special form of hyperæmia of this membrane with nervous symptoms, by Professor Rosenbach of Berlin.[6] He has seen five cases. The affection is characterized by intense hyperæmia of the conjunctiva, especially of the upper lids. In all of the cases the subjects were plethoric, and between forty and fifty years of age. The hyperæmia comes on periodically, or it may become more intense periodically, and is often associated with hyperæmic conditions of the nasal mucous membrane. The chief symptoms are a pronounced feeling of weariness and a heaviness about the head, want of rest with inability to sleep, periods of depression associated with anxious thoughts, and there is often a sense of constriction about the neck and chest, with frequent sighing. In short there are found all the symptoms of a highly nervous state. The affection defies the usual local treatment. The instillation of a weak solution of **Cocaine** does more good than anything else, but the relief is only temporary. Independently of the history, that is to say of the periodicity of the attacks and of the accompanying nervous phenomena, the diagnosis can only be made from the ineffectiveness of the usual local remedies for conjunctivitis, and from the rather remarkable effect of cocaine. The author is unable to say whether the condition is in any way indicative of cerebral hyperæmia, but he is decidedly of the opinion that disturbances in the intestinal tract, hæmorrhoids, etc., may be factors.

REFERENCES.—[1]*Ophth. Rev.*, April, 1901 ; [2]*Med. Press and Circ.*, Oct. 10, 1900 ; [3]*New York Med. Jour.*, Nov. 24, 1900 ; [4]*Ibid.*, Nov. 3, 1900 ; [5]*Inter. Med. Mag.*, Feb., 1901 ; [6]*Woch. f. Therapie und Hygiene des Anges*, No. 36, 1900 ; *Annals of Ophthal.*, July, 1900.

CORNEA, (Affections of). *E. H. Holthouse, M.B., F.R.C.S.*

Ulcers.—Dr. G. W. Maser[1] has published a short article on the advantages of the **Actual Cautery** over other methods of treatment in severe corneal ulceration. All that is necessary to secure healing is to destroy the tissue involved in the ulcerative process, cauterizing well into the sound cornea. The great advantage of this method is that we can definitely limit the treatment to the part desired. Caustics may readily spread beyond the required limits into the healthy tissues beyond, doing more harm than good. The chief forms of ulcer requiring this treatment are described as follows: "They have little or no tendency to spontaneous recovery, but spread either over the surface or in depth. They have a dirty-greyish appearance, and generally have sharp edges." The specialist will use the galvano-cautery, but a simple and reliable substitute may be found in the common knitting-needle, heated to redness in the spirit-lamp. The cornea should be anæsthetised with cocaine, and the tissues thoroughly destroyed. Care should be taken to avoid perforation of the cornea, but this may follow without necessary injury. Dr. Maser quotes several cases to show the good results of this treatment, which though not new, can hardly be too widely recommended.

Frank Cornwall[2] (San Francisco) states that there are ulcers of the cornea that at times have the appearance of being progressive, yet which remain for weeks, characterized by slight if any invasion, and in which photophobia and reflex neuralgia are very great. **Electrolysis** is indicated in these cases, and also in what are called serpiginous ulcers. Its broadest field of usefulness, however, compared with any other method, is in chronic central ulcers which are very slight, the repair being almost complete. The voltage must be very low and the ampèrage not more than $\frac{1}{4}$ milliampère. Operating under a magnifying lens, the parts where the epithelial disturbance is greatest may be slightly touched with the end of the needle. If there are parts wherein Bowman's membrane seems involved, deeper and more thorough work will be needed, but caution should be exercised, and not too much done at one sitting. Cornwall has given this treatment a trial in phlyctenular ulcers of the cornea, and the results have always been to aggravate the condition.

H. Friedenwald[3] (Baltimore) has used **Tincture of Iodine** in twenty-five cases of dendritic keratitis and marginal ulcer of the cornea, without failure to bring relief and without untoward symptoms. He makes the application in the following manner: A bit of absorbent cotton is wrapped firmly about a fine wood toothpick,

so as to form a narrow, firm swab. This is dipped into the tincture of iodine, and the excess allowed to drop off. The eye having been prepared, by instilling cocaine and a drop of fluorescein, the ulcerated area is thoroughly scrubbed until a distinct brown discoloration of the tissues is seen. The neighbouring epithelium is very much loosened and curls up in all directions. It is important to touch this, and especially the minute infiltrations seen a millimetre or two away from the main line of ulceration; for the prognosis of the disease is usually this: That after these infiltrations are observed the furrowed ulceration soon makes its appearance. The only error which is likely to be made is to apply the iodine too cautiously: he has never seen any ill effect from its being used too freely. Since he has become bolder in using it, it is rare that a second application is needed. The application is usually followed by some pain, lasting for a few hours. The eye is bandaged and an ointment of boric acid, iodol, or the like is applied. The bandage can usually be dispensed with after a day or two, though it may be well to use the ointment a few days longer.

Rodent Cancer.—Mr. Sydney Stephenson[4] has recorded a case of this very rare affection of the eye. The patient, a female, sixty years of age, after ulceration of the left eye was attacked by severe episcleritis in the right. This followed the usual chronic course for twelve months, when an oval ulcer made its appearance on the outer side of the cornea of the same eye. Seven weeks later the ulcer was larger, with a raised sinuous edge advancing towards the central region, and its malignant character was then suspected. After a further interval of about four weeks all doubt as to the nature of the ulcer having passed away, the **Galvano-Cautery** was thoroughly applied with satisfactory results. The operation was repeated later on, and in six months from the first application the ulcer had completely healed. Though the outer third of the cornea was the seat of a slight opacity with delicate extensions across the pupillary region, fair vision was retained, and the corneal trouble never recurred.

REFERENCES.—[1] *Jour. of Electro-Therap.*, Sept., 1900; [2] *Arch. Ophth.*, Jan., 1900; [3] *Amer. Jour. of Ophth.*, July, 1900; [4] *Lancet*, July 21, 1900.

CORNS. *Priestley Leech, M.D., F.R.C.S.*

Dr. E. L. Wood[1] says the following method is very good in corns. Pare the corn as closely as possible without causing bleeding, then place a drop of croton oil in the centre of the corn and bandage for twelve hours. Remove the bandage, and paint the corn with reliable cantharidal collodion. A pustular bleb will result, which

will include the entire callosity, nucleus and all, and can easily be removed. The process should be under the eye of the surgeon for treatment antiseptically after the callosity has been removed.

REFERENCE.—[1] *Med. Rec.*, March 9, 1900.

COXA VARA. *Keith Monsarrat, F.R.C.S.E.*

The earliest clinical descriptions of this condition were given by Monks[1] and Keetley.[2] Müller,[3] in 1889, described the condition as occurring in young people from fourteen to eighteen years of age, without special cause, or nominally as a result of injury. Monks described his case as one of universal deformity of both hip-joints, and regarded the condition as due to arthritis deformans. Keetley performed a cuneiform sub-trochanteric osteotomy in a case of marked adduction of the right hip, genu-valgum, eversion and shortening. The wedge removed showed "exactly such changes as are seen in bones known to be affected with rickets." Credit is certainly due to Keetley for the first clinical description accompanied by pathological report. Since this time a large number of cases have been reported, and much has been written on the subject, especially by German surgeons. In 1894 Hofmeister and Kocher both published elaborate papers on the deformity. The account given by Hofmeister first established the condition as a not uncommon deformity, attended by characteristic symptoms and signs. He tabulated forty cases, and gave a lucid description of the functional changes, to which little has since been added.

Some discussion has taken place as to the nomenclature; the two titles most in favour are "coxa vara" and "curvature of the neck of the femur." The objection to the first is that the deformity is in the majority of instances a compound one, the axis of the neck and of the limb being altered in at least two directions; the objection to the second is that it is cumbrous. To "incurvation of the neck of the femur" (Tubby and others) there is the objection of inaccuracy in that, as has already been stated, the condition is not as a rule a simple in-curve.

The deformity occurs most commonly at three periods: (1,) As a congenital condition; (2,) During childhood, along with other rickety deformities; (3,) During adolescence.

(1,) *Congenital Coxa Vara.*—Kredel first described this variety. Of late attention has been directed to its relation to congenital dislocation of the hip. Alsberg[4] has related a case of the latter deformity on one side, with coxa vara on the other, both demonstrated by the X-rays. He states that Albert had previously described the com

bination, and he considered it probable that in his case there was originally a double luxation. Bade[5] has also recorded the association. In ninety-four cases of congenital dislocation in Hoffa's clinic, he found changes in the joint on the apparently sound side in twenty-five; in two of these the deformity was typically coxa vara; in others the changes in the neck resembled those in coxa vara, but the actual deformity was not reproduced. Both deformities he looked upon as secondary to some morbid process occurring early during fœtal life. If the resulting changes are advanced, dislocation follows; if they are only in the upper part of the neck, coxa vara may result.

Wagner[6] has examined the anatomical preparations from three children on whom the operation for congenital dislocation had been performed, and found a degree of coxa vara present, with the trochanter major directed backwards.

Coxa vara does then occur as a congenital deformity, but no materials are available which will permit of a complete discussion of its etiology, and its rarity deprives it of much clinical importance.

(2,) *Coxa Vara of Childhood.*—It is otherwise with rachitic coxa vara. Now that attention has been directed to the deformity, it is found not uncommonly in association with other rickety deformities of the bones, and especially those which result in genu valgum. The mechanism of its production is readily explained; similarly with the increase in the outward and forward curve of the corpus femoris, it is the result of the body-weight acting on softened bony structure. That it is not more common, that it is not in fact the commonest of all rachitic deformities, is perhaps due to density and strength of the compact tissue of the neck, the shaft giving way first and more readily. Laüenstein[7] first recorded a case of this type. The deformity was not recognised during life; the neck of the femur formed a little less than a right angle with the shaft, and the under border of the neck was much shortened. Charpentier,[8] in thirty-two rachitic children, found the condition present in six. The present writer has seen it in three cases associated with genu valgum, but n none was it present in a very marked degree. Clinically it differs from the third, the adolescent type, to a degree necessitating a separate description. In the first place the deformity is compara tively slight; according to Charpentier (*loc. cit.*) the angle between the neck and the shaft is not as a rule reduced to a right angle. In the second place it would appear that the deviation of the neck is usually in one plane only, the frontal. In the third place it is usually bilateral.

As a result the following signs are present: The trochanter is

raised, the leg is shortened, and abduction is limited; there may also be diminished inward rotation, but Charpentier and Alsberg[9] have shown that the latter is produced by rachitic bending of the upper part of the shaft, and if inward rotation is limited in these rickety cases, it is in all probability due to this. In the cases observed by the present writer there was little interference with function that could be ascribed to the deformity, and this appears to be the experience of others. Its diagnosis and mechanism will be discussed along with the third, the adolescent type. The treatment is that of rickets, and the child must be taken off its legs. Tubby[10] recommends fixation on a Hamilton's or Bryant's splint. The double

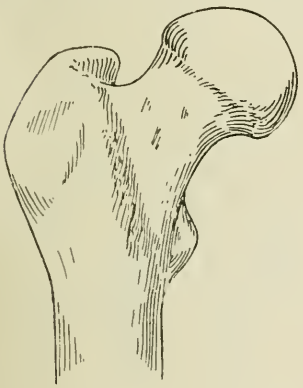

Fig. 20.—Showing head, neck, and upper part of the shaft of a normal Femur, from the front.

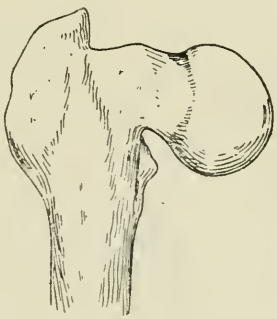

Fig. 21.—Showing simple bending of neck in downward direction.—(Sudeck.)

Thomas's hip splint is also suitable, the leg pieces being widely separated so as to keep the limbs abducted; one of the writer's cases was much benefited by two months' fixation on this splint.

(3,) *Coxa Vara in Adolescence* is the most important of the three varieties. The usual case differs from the rachitic form in childhood, in (*a*,) the severity of the symptoms; (*b*,) the degree of distortion; and (*c*,) the fact that it is often etiologically obscure.

Pathological Anatomy.—There is a diminution of the normal angle between the axis of the neck and the axis of the shaft (*Fig.* 20), that is to say, distortion in a frontal plane, accompanied by, in most cases, curvation of the neck backwards, *i.e.*, distortion in a sagittal plane. Rarely the sagittal distortion is forwards. These conditions are illustrated by the following specimens.

Sudeck[11] has described and figured a case demonstrated by the X-rays in which the neck was markedly bent downwards and approximated to the lesser trochanter; the lower border of the neck was shortened, the upper border in the form of a curve with the convexity upwards. Here, apparently, the distortion is frontal without any considerable degree of sagittal curvation (*Fig.* 21).

Schultz[12] has described a specimen as follows: The lower border of the neck in much shortened, forming a concavity with a diameter of 1·5 cm. The upper border is elongated and convex. The distortion of the neck is not only downward, but also backward. The head is not, as usual, two-thirds of a sphere, but only a third of the normal size, and looks inward and backward instead of inward and

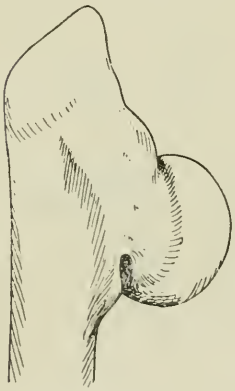

Fig. 22.—Showing downward and backward displacement of the head and neck.—(Schultz.)

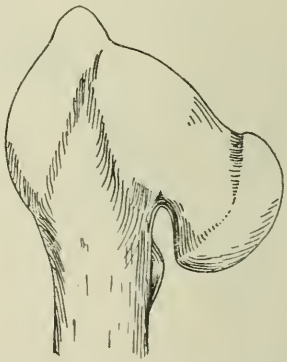

Fig. 23.—Downward and backward displacement of head and neck.—(Kocher.)

upward. The relation of the head and neck to the acetabulum is that normally taken up when the limb is in a position of adduction and inward rotation (*Fig.* 22).

Kocher[13] describes a specimen as follows: The neck of the femur is bent downwards and backwards around its transverse axis, and outwards and backwards around its vertical axis; the neck is elongated and presents a marked forward convexity (*Fig.* 23).

These three specimens illustrate varieties of the deformity. The second and third resemble each other; the first is unusual, in that the bending of the neck is in one plane only. Of thirty-two cases of which R. Whitman[14] speaks, in twenty-seven the displacement of the neck was downward and backward, with consequent rotation

outward of the limb ; in three only was the displacement downward and forward. Hofmeister analyses fifty-three cases into (*a*,) those with outward rotation ; (*b*,) those with no outward rotation ; (*c*,) those with inward rotation. There were only three cases in group *c*. The variety with forward curving of the neck is an extreme rarity, and is not taken into account in the following clinical description.

Signs and Symptoms.—The latter usually begin insidiously. The patient is easily fatigued, and complains of vague pains after exertion ; a certain degree of lameness follows, and he gradually becomes more and more a cripple. He notices that one leg (assuming the condition is unilateral) is becoming shorter than the other, and he has increasing difficulty in walking, stooping, and sitting. If the condition is bilateral, walking is much interfered with or almost impossible, the legs tending to cross, and the only way he can get along is by swinging one leg round and in front of the other, while his body sways from side to side. The writer has seen one old-standing case in which about ten steps at a time was all the patient could manage, so great was the exertion necessary to get one leg past the other by vigorous movements of the body taking the place of the required, but impossible, abduction.

On examination of a typical case the following signs are detected : The limb on the affected side is shorter than the other, and there is some muscular wasting ; it is in a position of adduction, and the trochanter is prominent. On measurement the tip of the latter is found to be elevated above Nelaton's line ; Bryant's triangle also shows this elevation ; there is outward rotation in the vertical axis of the limb. On testing passive movement, abduction and inward rotation are found to be limited ; movements in other directions are fairly free, except that flexion may be difficult without an accompanying outward rotation ; the range of outward rotation is apparently increased.

These signs are explained by reference to the already described anatomy of the deformity. The relation of the head and neck to the acetabulum is that which they normally occupy when the thigh is in a position of abduction and inward rotation ; it follows that any further abduction or inward rotation must be limited, and attempts to carry the deformed head and neck beyond the limits of their already adopted position of abduction and inward rotation will be soon resisted. An additional resistance to abduction is afforded by the meeting of the trochanter with the brim of the acetabulum when the leg is carried outwards Inward rotation being limited,

outward rotation is apparently increased; what is subtracted from the one is added to the other. The amount and direction of the limits to movement vary of course according to the exact variety of the deformity; if the bending of the neck is only downwards, rotation will not be interfered with; if it is forwards, outward rotation will be limited, inward rotation apparently increased. The signs first described are those attending the commonest variety.

Etiology.—The etiology of the deformity as it is found congenitally and in childhood has already been indicated. That of the adolescent form is more in dispute. In no case except Keetley's have definite rachitic changes in the bone been demonstrated. According to Schultz and others, the structure of the neck, instead of being more compact in the vicinity of the trochanter, is denser near the head, but what morbid process is responsible for this change is not explained. According to some a predisposition to the deformity occurs congenitally, or is acquired in childhood, the progress during adolescence being caused by laborious occupations, weight carrying, etc. Such a predisposition may be due to a rickety bending of the neck in childhood (Charpentier) or a fracture of the neck (Whitman[15]). Arthritis deformans (Maydl) is apparently the original cause in a considerable number, and Charpentier and Kirmisson speak of what they term osteitis "de croissance." Hofmeister has reported one case due to puerperal osteomalacia. In spite of these observations, the process which precedes the deformity in most adolescent cases is obscure.

Diagnosis.—Little[16] has made some instructive remarks on diagnosis, and mentioned three cases provisionally diagnosed as coxa vara, which were all shown by radiography to be congenital dislocation of the hip. The importance of **Radiography** in diagnosis cannot be exaggerated. Some cases of congenital dislocation cannot, t appears, be with certainty distinguished from coxa vara without this method of examination. The radiograph will also distinguish the deformity from coxitis, with which it might be confused from the pain and limitation of movement, the lameness, and wasting, which are common to both. In coxitis, however, the limitation of movement is due to muscular spasm which checks movement in every direction. Rachitic bending of the upper part of the femoral shaft may to a certain extent simulate the position of the limb in coxa vara, but careful examination will readily distinguish between them.

Treatment.—The treatment when active rickets is present has been already alluded to. As soon as coxa vara is diagnosed, measures

should at once be taken to relieve the neck of the femur, and to do away with the muscular spasm which is always present. Rest in bed for a week or more, followed by the wearing of a splint which allows of progression but takes the weight of the body off the limb, will meet these requirements. After a month or more of this palliative treatment, an estimate can be formed of the degree of the deformity which is likely to be permanent, and the question of operative interference comes to be decided.

Operative procedures have been either a **Linear Osteotomy**, or the **Removal of a Wedge.** Kocher and others now recommend **Subtrochanteric Osteotomy**; by this the faulty position of the limb can be corrected, and with proper after-treatment the angle between the neck and the shaft can be to a great extent rectified. A probable improvement on this is a higher osteotomy through the base of the neck, as recommended by Budinger.[17] Keetley removed a wedge from the shaft; recently he has suggested[18] another procedure as follows (*Fig.* 24): Oblique division of the femur from without inwards and downwards just above the lesser trochanter; a wedge-shaped piece is then taken from the outer aspect of the upper fragment, and the latter being rotated, the surface *A B* is brought in contact with the line of the first bone incision *C D*, and fixed there with silver-plated steel pins.

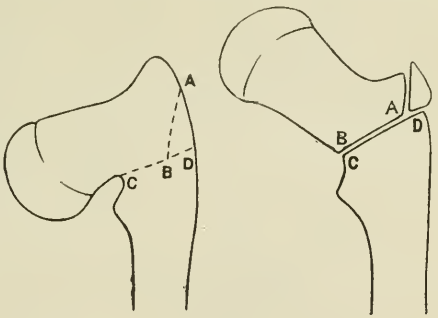

Fig. 24.—Keetley's Suggested Operation.

Royal Whitman (*loc. cit.*) gives the following method of procedure, and relates six illustrative cases. The restriction of movement, which is of ligamentous and muscular origin, must first be overcome by manipulation. A wedge is then taken from the diaphysis with its base $\frac{3}{4}$ inch in breadth directly opposite the trochanter minor. The cortical substance is not divided on the inner side, but, reinforced by the trochanter minor, serves as a hinge on which the shaft of the femur is gently forced outwards until the opening is closed by the apposition of the fragments, after the upper segment has been fixed by contact with the margin of the acetabulum; this continuity of the bone is preserved by fixing the limb in a

position of extreme abduction by means of a plaster spica bandage (*Fig.* 25).

In any given case the surgeon must be guided by what is revealed by the skiagraph; no set procedure is suitable to all cases. The question of linear or cuneiform osteotomy will depend to a certain extent on the degree of the distortion; if this is extreme, a wedge will probably have to be taken if the bending is to be satisfactorily rectified.

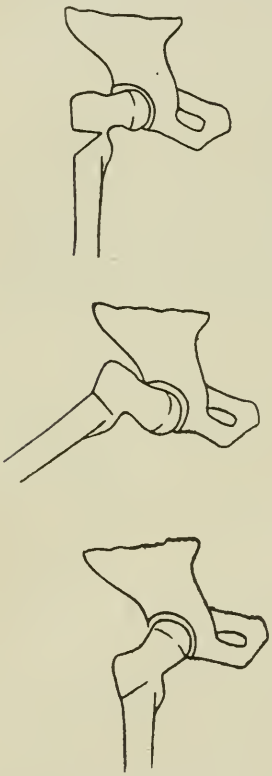

Fig. 25.
Royal Whitman's Procedure.

REFERENCES.—[1]*Boston Med. and Surg. Jour.*, Nov. 18, 1886; [2]*Illust. Med. News*, Sept., 1888; [3]*Beit. z. klin. Chir.*, Bd. iv, 1889; [4]*Zeit. f. Orthop. Chir.*, Bd. vii, Hft. 2; [5]*Cent. f. Chir.*, July 14, 1900; [6]*Zeit. f. Orthop. Chir.*, Bd. viii, Hft. 2; [7]*Langen. Arch.*, Bd. xl, p. 244; [8]*Rév. d'Orthop.*, 1898, Nos. 3 and 4; [9]*Zeits. f. Orthop. Chir.*, 1898, Bd. vi, Hft. 1; [10]*Brit. Med. Jour.*, July 23, 1898; [11]*Cent. f. Chir.*, No. 13, 1899; [12]*Zeits. f. Orthop. Chir.*, 1891, Bd. 1; [13]*Deut. Zeits. f. Chir.*, 1894, Bd. xxxviii, p. 536; [14]*Ann. Surg.*, vol. xxxi, p. 154; [15]*Ibid.*; [16]*Brit. Med. Jour.*, Nov. 5, 1898; [17]*Wien. klin. Woch.*, 1896. No. 32; [18]*Lancet*, April 21, 1900.

CRAW-CRAW.

James Cantlie, M.B., F.R.C.S.

R. A. Bennett[1] describes a disease met with in Southern Nigeria, consisting of a papular, vesicular and pustular eruption affecting the inner side of the thighs, the buttocks, legs, back, hands and arms. The disease is markedly contagious, and can be easily inoculated, either upon another part of the person's body or upon a healthy individual. The natives of Old Calabar give the name craw-craw to practically all skin diseases except yaws; yet even these natives recognise three varieties of the malady, namely: Leprosy or bad craw-craw; tinea circinata, or kroo-boy's craw-craw; and craw-craw proper. Dr. Bennett condemns the use of the word craw-craw as signifying a distinct ailment, and classes the affection as a pustular eczema merely.

TREATMENT.—Cleanliness and the application of **Zinc** and **White Precipitate** ointments usually effect a cure.

REFERENCE.—[1] *Jour. Trop. Med.*, Feb. 15, 1901.

CRETINISM. (See also "Metabolism.") *R. Hutchison, M.D.*

Murray[1] says that early treatment is here of the first importance. Small doses of **Thyroid Extract** should be used, 1 minim at bedtime being sufficient in the case of a child. This may be increased by the addition of 1 minim each week or fortnight till a maximum of 5 minims is reached. In the case of adult cretins, 2 or 3 minims may be ordered at first, but here also the increase should be gradual. The permanent dose should be about 1 minim for each year of the child's age up to ten or twelve years.

REFERENCE.—[1] *Pract.*, April, 1901.

Græme M. Hammond, M.D., New York.

Barbour[1] says, in speaking of the treatment of cretinism, that there are several features which must be watched in the administration of **Thyroid Extract.** With the improvement in the myxœdematous condition there is a loss of weight until the mucoid substance has been absorbed from the skin and eliminated. The increased metabolism is apt to produce fever, which is a disadvantage, and indicates a rapid cell metamorphosis. With the advent of fever the remedy should be discontinued, and then its administration cautiously resumed. When the myxœdematous condition is relieved there is, again, an increase in weight. The action of the heart is frequently accelerated. With an overdose of the extract there are apt to be marked and disagreeable vasomotor symptoms, so that the pulse rate should be watched, and the dose increased or diminished accordingly. Several observers have noted the effect of thyroid medication in increasing the growth of the long bones. In some cases the growth has been so rapid as to seriously impair their strength, and exaggerated curvatures have been the result. It is necessary to continue observation and treatment of these cases after cretinous symptoms have been relieved, though it has been found that the occasional administration of a large dose is sufficient to maintain the effect of the medicine.

REFERENCE.—[1] *Pediatrics*, May 1, 1901.

DELIRIUM TREMENS. *Græme M. Hammond, M.D, New York.*

Warbasse[1] recommends the intravenous injection of **Saline Solution** in delirium tremens, and reports an interesting case, who, even though almost *in extremis*, promptly recovered when this

procedure was resorted to. He injected 1,200 c. centimetres (40 ounces) of saline solution at a temperature of 106° F. into the median cephalic vein. The circulation rapidly improved, the delirium subsided, and the patient regained consciousness, all in a few hours. Recovery was complete and rapid. The infusion in such cases increases the quantity of the circulating medium in which the toxic materials are dissolved, thereby diluting the poison and bathing the nerve centres with a more attenuated solution. The quantity of circulating material is increased above the normal, so that the excretion of fluids through all the fluid-excreting channels is increased, thereby carrying off a great deal of the toxins. The action of the heart is improved by filling the relaxed vessels.

Braunlich[2] recommends for the anorexia, which so often follows an attack of acute alcoholism, a dose containing ten minims each of the tinctures of **Capsicum, Nux Vomica, and Ginger.** He believes that rest is more serviceable than exercise. If there is severe gastritis capsicum should not be used on account of its irritant action. In a number of cases of "wet brain" **Lumbar Puncture** was performed. In some instances improvement followed, but there seemed to be very little, if any, direct effect. In general, forced feeding and stimulation are the important elements in the treatment after the acute symptoms have passed away. The patient must be tempted to take as much food as possible for at least a week or ten days. At least six or eight eggs a day should be given. Water should be given freely. **Aqua Ammonii Acetatis** may be freely used, and will be found to be very stimulating.

REFERENCE.—[1] *Therap. Gaz.*, July 15, 1901 ; [2] *Med. News*, Feb. 9, 1901.

DERMATITIS DUE TO X-RAYS. *Norman Walker, M.D.*

Keinböck discusses the cause of these. He says the most generally accepted view is that the skin is affected by the electrical discharges from the tube, and not by the rays themselves. If the vacuum in the tube is very high, too high for the E. M. F. to overcome the resistance, the current finds its way through the air outside the tube, and is not converted into X rays. In very hard tubes the rays produced have great penetrative power. In medium soft tubes almost all the electricity is converted into rays, and very little passes round outside the tube. Keinböck believes[1] that the dermatitis always results from the X rays, and not from the electric discharges, and he recounts the experiments which led him to this conclusion. Four patients were treated for hypertrichosis, sycosis, etc., with a

hard tube. The changes produced were inconsiderable; temporary alopecia occurred in one case, but the hair grew again in spite of the continuance of treatment. A medium soft tube was then substituted, and on the eleventh to the fifteenth day there was so much reaction that the treatment had to be suspended. The hair fell out abundantly. Several rabbits were then exposed on one side to a hard, on the other to a soft tube. The latter alone caused alopecia and dermatitis. His most striking experiment was the interposition of a leaden block between the tube and the skin. In the centre of the resulting dermatitis was a sharply-margined area of healthy skin corresponding to the leaden block. He advises that after three to five applications a pause of two to three weeks should be made, for it is often that time before reaction sets in.

On the other hand, Schiff and Freund reported to the *Wiener Aertzte Verein* their experiments on the effects of currents of high tension, which they found to produce alopecia and dermatitis. They exposed the patient for twenty minutes to the silent discharge of the negative pole of a powerful Ruhmkorff coil.[2]

REFERENCES.—[1]*Wien. klin. Woch.*, Dec. 13, 1900; [2]*Lancet*, Jan. 12, 1901.

DERMATITIS HERPETIFORMIS. *Norman Walker, M.D.*

Hardouin[1] concludes that there is a constant relationship between the variations in the excretion of urea and the eruptions. The attacks always coincide with a considerable increase in the elimination of urea.

REFERENCE.—[1]*Ann. des Derm.*, No. 11, 1900.

DIABETES. *Prof. Robert Saundby, M.D., LL.D., F.R.C.P.*

In connection with the treatment of diabetic dyscrasia, Lépine[1] suggests that the poisonous beta-oxybutyric acid is formed from beta-amidobutyric-nitrile. Such nitriles are contained in albuminous substances, and are capable of giving rise to very dangerous poisons, such as cinnamic-nitriles, and he suggests that if beta-amidobutyric acid is not the true cause of diabetic coma, the latter is probably due to some of these complex nitriles. He points out that Piquet has shown that **Phenols** have the power of antagonising the toxicity of nitriles, but he doubts the practical success of such medication. He rather recommends the use of a weak **Diuretic Mineral Water.** When acidosis is really present, **Bicarbonate of Soda** in large doses should be given, but he warns against the employment of such large doses as 100 grammes (3½ ounces) as they are not absorbed, but the absorption of the salt should be closely followed by

watching the reaction of the urine, and by estimating the quantity of soda present in that liquid. If coma is imminent, he recommends intravenous **Injections** of a 1 per cent. solution of bicarbonate of soda, but he considers subcutaneous injections to be dangerous in diabetes, and urges that the solution should be injected slowly into the veins while the heart is auscultated. In this way 2 to 3 litres (3-4½ pints) can be introduced without risk. Finally, he recommends the employment of **Oxygen** inhalations.

Forty years ago **Sugar** was used in the treatment of diabetes, by some on the absurd theory that as the organism was losing sugar it was necessary to give it, and by Budd, Corfe, and Sloane because they had observed empirically that patients so treated derived benefit. Lépine[2] has recently met with a case of this kind in a man aged sixty, who had suffered from moderate diabetes for twenty years. After an attack of influenzal bronchitis he became much worse, and lost a good deal of weight, while he was so feeble that he could hardly walk about his room. Despairing of recovery, he allowed himself the indulgence of putting sugar in his wine, tea, and coffee. To his surprise, he found that a dose of 600 to 700 grains of sugar daily had no ill effect, but, on the contrary, increased his strength. His body weight, which had fallen to 100 pounds, increased nearly two pounds in fifteen days; the total quantity of sugar excreted by the patient was only about 200 grains, and there was no coloration on the addition of perchloride of iron. Lépine explains the paradox by pointing out that all diabetics can take a small quantity of sugar or sugar-forming substances, and many can tolerate an ounce to an ounce and a half of levulose; that cane sugar consists of half glucose and half levulose; and further he suggests that honey, which consists almost exclusively of levulose, might be more suitable than cane sugar.

In the treatment of dyspeptic diabetes, Robin[3] recommends absolute milk diet, with **Alkalies** such as magnesia, bicarbonate of soda, chalk, Vichy water, etc., to combat the excessive acidity.

Chatin and Guinard[4] have employed the **Serum** which they obtained from the pancreatic vein of a dog, as a remedy in diabetes. It was administered by means of rectal injections; both patients had been placed on a moderately strict diet and were under observation for some days before the injections were begun; no other drug was administered. There was an appreciable decrease in the amount of sugar excreted, but in both cases the quantity had progressively diminished upon the limited diet before the exhibition of the serum. Moreover, a double dose of the serum had no more

effect than the single dose upon the quantity of sugar. The authors conclude that the serum had no influence upon the disease.

Lancereaux[5] has recommended **Lecithine** in the treatment of pancreatic diabetes, stating that under its use in doses of 40 to 50 centigrammes (6 to 7 grains), not only does the wasting cease, but there is rapid increase of weight, and considerable improvement in the general health. According to Desgrez and Zaky,[6] lecithine when injected under the skin or given by the mouth causes very marked increase of weight in dogs and rabbits. The effect upon the urine is to cause an increase of urea and of the total nitrogen, with diminution of phosphoric acid. Lecithine is at present a very expensive drug, costing about £2 per drachm. The writer of these notes procured some from Merck, and tried it upon a case of diabetes with wasting, in doses of 6 grains daily, continued for ten days; the result was negative, the patient's weight being practically the same at the end as at the beginning of the experiment, although he was able to take a fairly liberal diet, and to assimilate several hundred grains of carbohydrates daily.

Albuminuria in Diabetes.—According to Prof. Schupfer,[7] albuminuria occurs in diabetes where this is complicated by arterial sclerosis. The two conditions are independent as a rule, although the sclerosis may affect the pancreatic vessels and so cause diabetes. As a rule the link appears to be the gouty diathesis. He thinks the appearance of albuminuria is always a bad sign, although it may be due to cystitis, pyelitis, or stasis in the kidneys, but in most instances it is the expression of a genuine nephritis. The diet in these cases should be arranged more with regard to the nephritis than to the diabetes. Fresh vegetables and milk may be given with advantage, while tea and coffee should be excluded or taken in moderate quantity.

Treatment of Diabetic Coma.—A case has been recently published by Schwarz[8] which calls attention to the possible value of **Glyconic Acid** in the treatment of this fatal complication. The patient was a young man, aged twenty-eight, suffering from severe diabetes complicated by phthisis. In the course of six weeks he had three attacks of coma, with typical dyspnœa. On the first occasion he was given 70 grammes (2½ oz.) of glyconic acid, in half a litre of water, neutralised by bicarbonate of soda, and 140 grammes (4⅔ oz.) of bicarbonate of soda were administered at the same time by the mouth and the bowel. Under this treatment he regained consciousness, and continued better for three weeks, when he had a new attack, which disappeared after the administration of 50 grammes (1⅔ oz.) of glyconic acid in alkalinised water. The second recovery

lasted fifteen days, when the coma recurred, and as there was no glyconic acid available he was treated exclusively with bicarbonate of soda, and died on the third day. No doubt one such result is not sufficient to establish the value of the remedy, but it is worth noting, in order that a supply of glyconic acid may be available for trial. (See also "Metabolism.")

REFERENCES.—[1]*La Sem. Méd.*, 1900, No. 48; [2]*Ibid.*, Dec. 12, 1900, p. 425; [3]*Rev. de Thérap. Méd. Chir.*, Feb. 15, 1901, p. 109; [4]*Lyon Méd.*, Dec. 23, 1900; [5]*La Sem. Méd.*, 1901, p. 202; [6]*Ibid.*, 1901, p. 202; [7]*Il Poniclinico*, Feb., 1900; [8]*Prag. Med. Woch.*, 1901.

DIARRHŒA AND INDIGESTION OF CHILDREN.

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Escherich[1] states that a study of the intestinal tract under normal conditions should form the basis of any work on the importance of bacteria in the etiology and pathogenesis of the gastro-intestinal affections of nurslings. There are many reasons for assuming that the presence of a bacterium different from those normally present in the intestine may cause morbid phenomena, especially when the micro-organism is pathogenic to man or capable of producing fermentation. The bacteria may give rise to poisons by decomposing the intestinal contents, or they may cause inflammation of the intestinal mucosa, and, after destruction of the epithelium, general infection. Toxic bacterial products formed outside of the body may also cause disease, especially in warm weather. Classified according to their etiology, it becomes possible to distinguish: (1,) Intoxications due to ectogenous decomposition; (2,) Infection of the chyme; (3,) Infectious diseases of the intestine. All rapidly multiplying saprophytes of the intestinal tract or of milk may be concerned in the production of the first two varieties (proteus, proteolytes, bacterium lactis). All bacteria pathogenic to man may cause the third variety. As a matter of fact, in the case of the nursling, infections with the staphylococcus, streptococcus, colon bacillus, streptothrix,(?) and bacillus pyocyaneus (?) are known. The mixed infections play an important part in the pathogenesis of the complications and sequelæ of gastro-enteritis.

Chas. G. Kerley[2] gives the treatment of 555 cases of summer diarrhœa. He states as follows: "In our management of summer diarrhœa we have one invariable rule of treatment, regardless of the severity or duration of the illness, regardless of the diet, whether breast-fed or bottle-fed, whether the stools are frequent or watery, or infrequent and foul. We **Stop the Milk** at once. This is based upon the belief that in every case of summer diarrhœa, no matter

how mild, we have an infected gut, or soon will have it, and we wish to make the intestinal contents as poor a culture field as possible." A case of so-called dyspeptic diarrhœa, with milk feeding continued, will soon become a virulent infection. In the great majority of cases the streptococcus and colon bacillus play an unimportant part at the commencement of the illness. No milk is allowed until the stools approximate the normal, which may mean an abstinence from forty-eight hours to five months.

The milk substitute found most useful was a cereal water. Either **Barley-water** or **Rice-water** was used. The directions were for Robinson's baked barley flour, two tablespoonfuls, water one pint. This is boiled for twenty minutes, strained, and water added so that there is one pint when the cooking is completed. A good mixture is 4 or 5 ounces of barley-water and 1 or 2 ounces of broth—beef, mutton, or chicken. Two teaspoonfuls of beef juice added to the cereal water, often makes a suitable change. By the use of carbohydrates the nature of the intestinal contents is changed from one of putrefaction to fermentation, which does not furnish a favourable soil for the growth of dangerous pathogenic organisms.

Dextrinized gruels have a useful field in the diet. It is impossible to give a stronger barley-water than two tablespoonfuls to a pint of water for any length of time; twice this amount may be taken if the cereal is dextrinized. Four table spoonfuls of barley flour to a pint of water, give a food strength of approximately: ·14 fat, ·6 proteid, and 4 soluble carbohydrates.

Four drugs were given, **Calomel**, **Castor Oil**, **Bismuth**, and **Opium**. Calomel is preferred in a case in which there is vomiting, or a tendency thereto, and when the case is not particularly urgent, $\frac{1}{20}$ to $\frac{1}{10}$ grain is usually prescribed at hour intervals. Castor-oil is given in the acute septic cases with infrequent stools and without stomach involvement, in which a prompt washing out of the small intestine is desired. Bismuth subnitrate was given in doses of at least 10 grains every one or two of the waking hours, regardless of the age of the patient. In order to be of service, the drug must produce black stools. If bismuth passes through the bowel unchanged, no influence will be exerted upon the intestinal contents. This is explained by the absence of sulphuretted hydrogen in the intestine, which condition is due doubtless to the absence of pancreatic digestion. In such cases the **Sulphur** is supplied in the use of precipitated sulphur, a 1 grain powder being given with each dose of the bismuth. The bismuth is continued in the large doses until the child is ready for milk, and then the dosage is diminished one half and continued

until full milk feeding is possible. The indications for opium are pain, tenesmus and frequent stools.

The cases that are benefited by irrigation are those that have a moderate number of green mucous stools with or without blood. Too frequent irrigation is condemned. A child of eighteen months will require 24 to 30 ounces of water.

F. M. Crandall[3] discusses the use of **Opium** in summer diarrhœa. The indications for the drug are as follows: (1,) Very frequent motions accompanied by pain. (2,) Extremely frequent, large, and watery movements. (3,) Dysenteric diarrhœa (after the administration of a saline or castor oil). (4,) In later stages of diarrhœa, with small, frequent, nagging passages. (5,) When the passages consist largely of undigested food, and the bowels act as soon as food is taken into the stomach.

The contra-indications have reference chiefly to the likelihood of interference with salutary intestinal drainage. They are: (1,) During the early stages of acute diarrhœa. (2,) When passages are infrequent and of bad odour. (3,) In presence of high temperature or cerebral symptoms. (4,) When the use of the drug is followed by elevation of temperature or increasing offensiveness of passages.

Opiates should always be administered alone, and as a rule at intervals of three or four hours. The best preparations are paregoric and the deodorized tincture of opium. The single dose of paregoric is as follows: At three months, 2 minims; at one year, 8 minims; five years, 30 minims. Other remedies, like the deodorized tincture and Dover's powder, are given on a corresponding scale, beginning with 1-12 of a minim or grain respectively for an infant at the age of three months.

J. Park West[4] treats chronic diarrhœas with three drugs, **Ammonium Chloride, Xanthoxylum,** and **Senna.** He almost invariably uses a prescription similar to the following, and believes that with its use the return to health is much speedier, and the restricted diet will not have to be so long continued:—

R Ammoniæ chloridi	ʒj-ʒjss	Ext. Glycyrrhizæ fld.	ʒiv-ʒvi
Ext. Sennæ fld.	ʒij	Aquæ dist.	qs. ad ʒiij
Ext. Xanthoxyli fld.	ʒvi		

M. Sig. Teaspoonful every four hours for child of two years.

In cases of chronic diarrhœa there is a diminished secretion of the normal juices, and an increased secretion of mucus; that from the upper bowel is not seen, but is still present, while that from the lower bowel is usually a noticeable feature. The three drugs stimulate the normal secretions and hasten nutritive changes, and each has

a special action on mucous membranes, particularly if there is a catarrhal process. Chloride of ammonium not only increases the secretion of the intestinal juices but liquefies the mucus, and will not increase the quantity of the latter if not too long continued. In the doses given, senna is a tonic and carminative, as well as slightly laxative, and insures a more regular action of the bowels. Seldom will the passages be so frequent while using these drugs as to require the omission of the senna. Xanthoxylum increases the flow of saliva and of all the other juices of the alimentary canal, and it is said to stimulate the entire capillary circulation. (A recent preparation of this drug should be used, as older ones are frequently inert.) After two to four weeks' use of these remedies the tonicity of the intestinal mucous membrane will be so restored that bismuth can exert an influence it could not before, and is now particularly beneficial.

REFERENCES.—[1]*Arch. de Méd. des Enf.*, vol. iii, No 12; [2]*Arch. Ped.*, vol. xviii, No. 8; [3]*Inter. Med. Mag.*, vol. ix, No. 7; [4]*Ibid.*, July, 1901.

DIETETICS. *R. Hutchison, M.D.*

Nutrient Enemata.—Ewald,[1] from an extensive experience, recommends the following enema: Two tablespoonfuls of wheat-flour are stirred into 150 c.c. of lukewarm water or milk, and to this one or two eggs with a pinch of salt are added, and the whole beaten up with 50 to 100 c.c. of a 15 to 20 per cent. solution of grape sugar. The addition of a little alcohol, in the form of a glass of claret, acts as an analeptic. Such an enema corresponds to about 450 calories, only part of which, however, is available.

Edsall[2] insists upon the fact that nutrient enemata are at best but imperfect means of nourishing the body. He attributes the rise in the patient's weight under their use, which is often pointed to as a proof of their nutritive value, mainly to a more abundant supply of water to the tissues.

Plasmon.—R. E. Williamson[3] has recorded several instances in which the dietetic use of this preparation proved very serviceable. The cases embrace examples of acute and chronic gastritis, tuberculous diarrhœa, gastro-intestinal catarrh, anæmia, acute febrile affections, and various examples of nervous dyspepsia. The plasmon was given dissolved in barley water, milk, or animal broths, several teaspoonfuls being administered in this way in the course of the day. It was always well borne, and in many cases seemed to bring about a decided gain in weight. He also speaks highly of plasmon biscuits and chocolate.

Meat (White and Dark).—Offer and Rosenquist[4] record investigations on the basis of which they consider that there is no fundamental reason to draw a distinction between the use of white and dark meat in gout and kidney diseases. Senator,[5] while acknowledging the value of their researches as regards the amount of nitrogenous extractive matter contained in various white and dark meats, points out that the authors quoted by them in support of their view speak of extractive matter generally, and that in one of the passages quoted he himself, after mentioning certain nitrogenous, expressly mentions "other extractive matters." Offer and Rosenquist have, he considers, neglected to estimate the non-azotised extractive matters, which, as regards beef and veal, the most important forms of dark and white meat, J. König has shown to be as 0·46 to 0·07 per cent. Moreover, no account has been taken of the fact that the meat is generally consumed cooked, and not in the raw state in which it was examined in these experiments, and cooking alters its composition and the amount of extractives it contains. König gives this amount as follows: Beef, roast, 0·72; boiled, 0·40 per cent., compared with only 0·03 per cent. in roast veal. Thirdly, the difference between various meats depends on more than the amount of nitrogenous extractive matter they contain. Some are more digestible than others, and there is a fundamental difference in the total amount of nitrogen, which is considerably more in beef, game, and ham than in veal, mutton, and most kinds of fish. The uric acid and other elements of albuminous metabolism in the urine are increased by increase of the quantity of nitrogen in the meat ingested. Apart from the nitrogenous extractive matter contained in different kinds of meat, there are fundamental differences between them which we know, and probably others; and there is no reason to abandon the opinion, founded on continued practical experience, that to gouty and nephritic patients white meats are the less injurious.

Oysters.—Oysters have for centuries been much esteemed by medical men as being very nutritious and easy of digestion, but both these properties are much diminished when the bi-valves are not taken in their raw state. It may not be generally known that the fluid which surrounds the oyster bears a closer analogy to the gastric secretion than anything else in nature. In addition to the solvent properties of this liquid, it is not without its nutritive properties. The *Sanitary Record*[6] has devoted considerable attention both to the substance and the secretion emanating from it, and finds that in a given weight of the latter and the same of the oyster, the fluid yields only 40 per cent. less of animal gluten or jelly than the fish

consequently, persons who are accustomed to eat oysters should be mindful that as little as possible of the juice should be lost, the fish being opened in the bottom shell. When oysters are either stewed or scalloped, the two properties are much diminished, and consequently oysters ought not, by invalids, to be taken except in their raw state.

Sugar, Dietetic Value of.—Dr. H. Willoughby Gardner[7] writes enthusiastically of the dietetic value of sugar. He traces the history of its introduction into European dietaries, and briefly reviews its chemistry and physiological behaviour. He concludes that the chief points in favour of sugar as a food are these :—

(1,) It is easily digested and absorbed.

(2,) It is readily stored up as glycogen, forming a reserve of force-producing material.

(3,) It is in this form readily available when required.

(4,) It becomes completely oxidised without any waste, and leaving no residue.

He further points out that it is an important proteid-sparer, and that it can be readily transformed into fat. These theoretical advantages have been amply verified both by direct experiments and experience. In proof of the former he refers to the ergographic work of Mosso, and of the latter to the large use now made of sugar in the German army, by alpine climbers, arctic explorers, various rowing clubs, and in the feeding of cab-horses in Paris. He goes on to recommend the use of sugar in wasting diseases, especially as a cheap substitute for malt extract, and instances cases in which he has found it very beneficial. The supposed injury which sugar may do to the teeth, he attributes to impurities and not to the sugar itself. It is contra-indicated in "mucous disease" in children, and in the case of *fat* gouty persons; but lean gouty individuals, he believes, may take it with advantage, whilst he has an open mind regarding its use in rheumatism.

Coffee-poisoning, Acute and Chronic.—Leszynsky,[8] while admitting the many beneficial actions of coffee, points out that its abuse is a common cause of disease. Amongst the symptoms of chronic coffee-poisoning he mentions vertigo, either of nervous or gastric origin, night terrors, insomnia, and tremulousness. He leaves it undecided whether these symptoms are produced by the caffeine, or by the caffeone which the infusion contains. Amongst the distinguishing marks of the "coffee-habit" he notes the following General headache and "nervousness"; apprehension in regard to some unknown impending trouble; mental depression and irritability

insomnia, or else restless sleep; bad dreams; sudden "starting" in sleep, and awaking in profuse perspiration; occasional or frequent vertigo; precordial oppression; cardiac palpitation; loss of appetite; frequent eructation of gas; and constipation. The tongue is tremulous and coated; there is tremor in the eyelids and hands; a dilated but active pupil; a rapid, low tension, and often irregular pulse; and exaggerated reflexes.

As regards treatment, he recommends the *gradual* rather than abrupt discontinuance of the beverage, but does not approve of any of the "coffee-substitutes" now on the market, all of which he has found apt to derange digestion. Suitable hydriatic treatment and attention to the diet and excretions must be systematically carried out, and in some cases a "**Rest Cure**" may be advisable. The most useful drugs are **Bromides** and nerve tonics, such as **Arsenic, Quinine,** and **Strychnia.** Under this treatment most cases recover completely in from three to six months.

Botulism.—Ossipoff[9] has lately investigated the effects of botulism, that is, poisoning by preserved meat, etc. In 1895 Ermengen discovered the pathogenic agent, an anaerobic bacillus which he isolated from cultures made with preserved ham, which had caused a serious attack. This he named the *b. botulinus.* In all the cases observed the phenomena were distinctly of central origin—for example, ophthalmoplegia, ptosis, mydriasis, paresis, dysphagia; and these symptoms were afterwards produced in animals, especially cats, by the experimental injection of cultures of the organism. Marinesco, who examined the nervous system microscopically, found the pathological changes most marked in the cord, especially the anterior horns, and modifications also of the cells of the bulb, the cerebral cortex, and the nuclei of the cranial nerves. He insisted upon the phagocytic function of the cells of the neuroglia. Ossipoff has experimented upon guinea-pigs, cats, and monkeys, the animals which most nearly resemble man in their reaction to the toxin. In guinea-pigs the symptoms observed were: (1,) Suppuration of the eyelids; (2,) Retention of urine and constipation; (3,) Pupillary dilatation; (4,) Paresis of limbs, etc.; (5,) Dyspnœa; (6,) Progressive asthenia, ending in death. In cats suppuration of the nasal mucosa and great hoarseness were present in addition, as well as a more marked dilatation of the pupil. The monkeys, though unaffected by small doses, succumbed to a large injection too rapidly for the symptoms to be observed in detail. On histological examination, the most marked changes were found in the grey matter of the cord, then, in order of severity, in the medulla, the cerebellum,

and the cerebral cortex. In guinea-pigs the first change was swelling of the chromatophile substance, beginning at the periphery of the cells, and soon followed by disappearance of all but the homogeneous protoplasm. The prolongations of the affected cells shrank and atrophied. The outlines of the cell became irregular, and vacuoles formed. Contrary to Marinesco's experience, the nucleus, and later the nucleolus, became swollen and atrophied wherever the cell changes were advanced. In cats, modification of contents began at one pole of the cell, extended to the rest of the periphery, and the whole protoplasm became rapidly homogeneous. The monkeys, owing to their speedy death, showed less advanced changes. In the vessels near the modified nerve cells were agglomerations of leucocytes. Over the whole visual field migratory cells were seen, either touching the nerve cells or penetrating into their interior. Ossipoff concludes that leucocytes play at least as important a *rôle* in the phagocytosis of botulism as do the cells of the neuroglia. The changes of the nerve cells are, he believes, in no way specific to botulism, but may be caused by many other toxins.

References.—[1]*Med. Rec.*, Aug. 18, 1900; [2]*Univ. Med. Mag.*, March, 1900; [3]*Lancet*, Nov. 24, 1900; [4]*Berlin klin. Woch.*, 1899, No. 43, 44; [5]*Ibid.*, No. 45; [6]Quoted in *Med. Rec.*, April 13, 1901; [7]*Brit. Med. Jour.*, April 27, 1901; [8]*Med. Rec.*, Jan. 12, 1901; [9]*Ann. Inst. Pasteur*, Dec., 1900.

DIPHTHERIA. *Edward Wilberforce Goodall, M.D.*

Etiology.—It is known that diphtheria may attack cats, and that in a modified form it probably occurs in milch cows. But hitherto the horse has not been suspected of harbouring the disease. A case of diphtheria, however, occurred at Portsmouth, and Dr. Fraser, the medical officer of health, ascertained that a pony was kept on the premises which at the time was ill and had a purulent nasal discharge. Cultivations made from this discharge were examined by Cobbett, of Cambridge, and found to contain diphtheria bacilli, the bacilli complying with both the cultural and the physiological tests. Cobbett and Claude Bolton have shown that the blood of some horses is naturally antitoxic to diphtheria toxin, and they raise the question whether this property of the blood may not be due to a previous attack of diphtheria in the animal concerned. It has long been known that the bacillus of diphtheria may be obtained from the fauces of healthy individuals; and it is important to know accurately what are the circumstances that determine this distribution of the organism. Two recent papers throw light on this question. Cobbett,[1] in an outbreak of diphtheria at Cambridge,

which he studied with great care, examined bacteriologically 692 persons, of whom forty-two were notified to have diphtheria. Amongst the 650 who were not notified, there were nineteen in whom diphtheria bacilli were found. "Of these nineteen a few had slight sore throat, and all but one received injections of antitoxin. Without this some would doubtless have developed into clinical cases of diphtheria. It is therefore impossible to say how often diphtheria bacilli were found in healthy persons. But this much may be stated, that *diphtheria bacilli were found only in actual cases of diphtheria or among those who had come directly into contact with such cases.* These latter were either children attending the school most affected, or inmates of houses where there was an actual case. Among a very large number of other people examined, the diphtheria bacillus was not found once."

These observations confirm those of Denny,[2] who also concluded that diphtheria bacilli were not often found in the throats of those who had not been exposed to the infection of the disease.

DIAGNOSIS.—Considering the value of bacteriological examinations in diphtheria, it is important to be able readily to recognise the bacillus in microscopical preparations. The so-called pseudo-diphtheria, or Hoffmann's bacillus, is very much like the true organism in appearance. Even the trained observer has occasionally to resort to cultural and physiological tests in order to differentiate between the two kinds. According to various observers, however, the best stain to use for differential purposes is Neisser's. This is made as follows: (1,) 1 gramme of Gruebler's methylene blue is dissolved in 20 c.c. of 96 per cent. alcohol, and then mixed with 950 c.c. of distilled water and 50 c.c. of glacial acetic acid; (2,) 2 grains of vesuvin are dissolved in 1 litre of boiling distilled water and filtered. The cover-glass preparations are placed in solution (1) for one to three seconds, rinsed in water, and then placed in solution (2) for three to five seconds, after which they are washed in water, dried and mounted. The bacilli will appear stained brown, and contain two or three large oval granules which are stained blue.

Beaton, Caiger and Pakes[3] state that a better result is obtained by keeping the preparation in each solution for two minutes instead of a few seconds. From a study of 100 consecutive cases of throat affections, mostly diphtheria, they came to the conclusion that Neisser's stain was a valuable one for three reasons: "First, a positive diagnosis is rendered more certain for those who cannot be considered as experts, since it is often easier to diagnose the Klebs-Loeffler bacillus after staining by Neisser than after staining by

ordinary methylene blue, as we think that for the inexperienced the bacilli, after staining by Neisser's method, are much more characteristic than after staining by methylene blue. Secondly, a trustworthy, positive result may be obtained from the microscopical examination of a preparation made direct from the swab; and this method is, we think, not only more reliable when Neisser's stain is used than when the ordinary methylene blue is employed alone, but is more obvious. Thirdly, the use of Neisser's stain does not appear to introduce any fallacy not found in the application of other methods."

TREATMENT.—The writer has now, after a very large experience in the treatment of diphtheria both without and with antitoxic serum, no hesitation in saying that the **Antitoxic** treatment is *the* treatment. Every patient who is found to have diphtheria—diphtheria, that is, as ascertained clinically and not merely bacteriologically—should forthwith be injected with the serum. The only exceptions to this rule are to be made in the cases of adults, in whom a mild attack may be left without antitoxin. Such a case should be carefully watched, and should any extension of the local exudation occur, recourse should be at once had to antitoxin. But diphtheria in children should always be treated with antitoxin, and it is very essential that the treatment should be commenced as early as possible. There are several advantages attaching to early treatment. In the first place the disease is cut short, and complications are infrequent in the second place only a small dose (that is, a small volume of the serum) is required. The serum occasionally produces certain unpleasant effects, and these effects are much more often met with after large doses (that is, usually, large volumes) of the serum than after small. Thirdly, early treatment means a saving of expense, not only in the cost of the serum itself, but in the cost of the subsequent treatment and nursing, especially if paralysis supervene. Every consideration, therefore, points to early treatment.

The question arises, Are doubtful cases to be treated with antitoxin? It depends upon circumstances. A sore throat, though not clinically diphtheria, arising in connection with cases which *are* clinically diphtheria, should be treated, if the patient is a child, with antitoxin; otherwise the practitioner may await the result of a bacteriological examination, which should always be made. But all cases of laryngeal obstruction which are not clearly due to some cause other than diphtheria (*e.g.*, post-pharyngeal abscess, foreign body) should be treated with antitoxin, for the majority of such cases, in children at any rate, turn out to be diphtheria in the end.

Dosage of Antitoxin.—For a mild case (usually an early case),

that is, one in which the exudation is limited, and there are no constitutional symptoms, 2,000 units. For more severe cases (late cases), 4,000 to 10,000 units, according to the extent of the exudation and the gravity of the constitutional symptoms. The injection should be repeated within twenty-four hours, but only half of the initial dose need be given if improvement has taken place. Meanwhile every effort should be made to remove the local exudation by frequent irrigation or swabbing. The following solutions are the most useful: A saturated solution of **Boracic Acid**; **Chlorate of Potash** solution; or the following:—

℞	Sodæ Bicarb.	℥j	Sodæ Chlorid.	℥ss
	Boracis	℥j	Tinct. Lavendul. Comp.	℥j
	Potas. Chlorat.	℥ss	Aq. ad	Oj

The diet should consist of liquid nourishment in the form of milk cream, prepared foods, or meat essences. As soon as the fauces are clear of exudation, solid food may be allowed. Stimulants are unnecessary unless there are signs of heart failure. **Strychnine** is a very useful drug during the acute stage of the disease. Rest in bed is very essential, and should be maintained for at least a week after the disappearance of the membrane, and for a longer period when there is albuminuria, or any cardiac disturbance or irregularity, however slight. But let the patient get as much fresh air and sunlight as is possible.

Paralysis is the most serious of the common complications of diphtheria. Briefly the treatment is as follows: Rest in bed, in the recumbent position if the paralysis is at all widely spread, or if the heart is affected; in severe cases avoidance of excitement (*e.g.*, frequent visits of friends); when the respiratory muscles are involved (larynx or diaphragm), raise foot of bed and feed patient with an œsophageal tube; feed also with tube if there is any difficulty in swallowing; clean out mouth frequently to prevent accumulation of saliva; drugs, **Strychnine** and **Iron**.

Frequent *vomiting* is common at all stages of diphtheria; it is most serious during the acute stage; it is best treated by rectal feeding. If this fails, Kirton[4] recommends the subcutaneous injection of 20 to 40 c.c. of sterile **Horse Serum** daily.

In a case of *laryngeal* diphtheria the patient should be put in a **Steam-tent**; this measure will often relieve the spasm that so frequently occurs. But when resort has been made to operation, whether tracheotomy or intubation, the steam-tent should be discontinued.

Intubation is not advisable in private practice; but in hospital

practice it is certainly to be preferred to **Tracheotomy** in cases where there is not an excessive amount of membrane upon the fauces, where there are not severe constitutional symptoms and marked cardiac failure, and where no membrane is being coughed up from larynx or trachea. It is inadmissible when the patient is *in extremis* from laryngeal obstruction. It should be performed with the patient in the recumbent position, without an anæsthetic. The writer prefers to employ Bayeux's modification of O'Dwyer's tubes, to be obtained from Collin, of Paris. When about to intubate, take care to have the tracheotomy instruments at hand: the writer has more than once been obliged to perform tracheotomy because the introduction of the intubation tube has caused cessation of respiration, presumably because the tube has pushed membrane before it and so blocked the trachea.

Basan[5] has published a useful paper on intubation in laryngeal diphtheria. He gives an account of forty cases in which he intubated at the Eastern Fever Hospital, Homerton. Eight of these cases required subsequent tracheotomy, and of these five recovered; of the thirty-two cases which were intubed only, twenty-eight recovered. He points out that the operation is by no means difficult to perform. Care must be taken in applying the gag preliminary to the introduction of the tube, as the gagging sometimes increases the dyspnœa. Occasionally it may be found impossible to insert the tube because the mucous membrane of the larynx is too swollen, or because spasm of the glottis is set up. As long as a patient wears the tube he is unable to swallow with safety, and must therefore be fed by an œsophageal tube. But he may be allowed occasional sips of water for the purpose of exciting a cough, whereby the trachea and tube are cleared of mucus. It is not necessary to retain the thread which is attached to the tube during its introduction. This should be cut and withdrawn. Subsequently the tube can be taken out by the process known as "énucléation" (Bayeux) or "expression." Let the child sit on the nurse's lap or on the side of the bed (unless the condition of the heart contra-indicates this posture, in which case he must lie on one side near the edge of the bed); bend his head back upon his spine so as to throw the larynx and trachea forward; place your left hand behind the child's head and your right thumb upon his neck just below the larynx; the child's mouth should be open; then simultaneously press firmly backwards with the thumb and flex the head forwards; the tube will slip from the larynx into and out of the mouth.

Prophylaxis.—In the outbreak of diphtheria at Cambridge

referred to above, and upon which Cobbett reported, there is every reason for believing that the spread of the disease was checked by injecting all those who had been exposed to the infection of the disease by coming into contact with actual sufferers, with a prophylactic dose of antitoxin. When injected as a prophylactic, 600 units of antitoxin will be found to be sufficient.

REFERENCES.—[1]*Jour. Hygi.*, vol. i, No. 2, April, 1901 ; [2]*Boston Med. and Surg. Jour.*, Nov. 22, 1900 ; [3]*Brit. Med. Jour.*, Sept. 21, 1901 ; [4]*Lancet*, June 15, 1901 ; [5]*Ibid.*, July 13, 1901.

DRUNKENNESS. *Græme M. Hammond, M.D., New York.*

Chirata[1] has been used in India for many years as a cure for drunkenness. The best way to administer it is in the form of an infusion (half-an-ounce of chirata to a pint of boiling water), the dose of which is from an ounce to two ounces three times daily. The disgust for drink which it creates is only temporary, however, and the patient must take the drug from time to time when the craving returns. (See also "Delirium Tremens").

REFERENCE.—[1]*N. Y. Med. Jour.*, Aug. 4, 1900.

DUODENAL ULCERATION. *R. Hutchison, M.D.*

Weir[1] states that ulceration of the duodenum is much rarer than a similar condition of the stomach, is more difficult of diagnosis, and is apt to be mistaken for other lesions, such as appendicitis. Its sité is usually in the upper part of the duodenum, close to the pylorus. In the 262 cases collected by Collin, the perforation occurred 242 times within two inches of the pylorus ; in the descending portion fourteen times ; in front of the aorta three times ; and in the ascending portion three times. The ulcerations are usually single and located on the anterior wall, hence the anterior perforations are much less likely to be closed off by adhesions, and a rapid involvement of the peritoneal cavity usually follows. Perforation is a likely sequela. It occurred in Collin's cases, in 69 per cent., and is more common in men than in women, about 79 per cent. of all cases being in males.

The exact etiology in every case is often difficult to discover. A coarse diet and alcoholic liquor intensify the acidity of the gastric juice, causing it to act unduly on the granular mucous membrane of the duodenum. The best known cause is the influence of external burns, supposed to be conveyed by septic infection. This may fairly be inferred by the later collection of Lockwood, in which in 138 cases of burns treated with more or less approach to antiseptic ideas, the complication of duodenal ulcers was noted in but one in-

stance. According to statistics, duodenal ulcer is a rare lesion. There have been reported only forty-one operations for this disease, and out of a total of 49,369 autopsies there were found 421 gastric ulcers and 108 duodenal ulcers, or about 0·2 per cent. It is encountered at all ages, from a case in a seven week's old child to an adult aged ninety-five.

The symptoms whilst non-perforated are frequently very slight. Pain, when characteristic, occurs several hours after eating. It may be slight or severe, and varies in position from a point just below the gall-bladder, to the median line or to a level with the navel. In many cases pain is entirely absent. Pressure, particularly over the region to the right of the twelfth thoracic vertebra, occasionally elicits pain. Vomiting is present in about 17 per cent. of the cases, but is of a reflex character. It is of diagnostic importance if it shows itself from an hour or so up to several hours after a meal, and the material ejected is composed of broken-down food, often mixed with blood and bile. Vomiting when it occurs usually relieves any pain that may be present. Jaundice, if present, which is rare, may be due to simple duodenal tumefaction, or to cicatricial contraction of the papilla. Hæmorrhage is to be expected in almost one-third of the cases of non-perforating ulcers. This bleeding can be severe, and show itself by mouth as well as by rectum. It can speedily prove fatal, as quite large blood-vessels may be opened in the progress of the ulceration. The colour will vary from that of tar to bright red. The diagnosis between duodenal and gastric ulcer is extremely difficult, but the following contrasting symptoms have been noted: Gastric ulcer, more frequent in women from the twenty-fifth to the fiftieth year; pain promptly after eating, relieved by vomiting; frequent biliary, mucus, and food vomiting; marked dyspeptic symptoms; frequent bloody vomiting; more seldom bloody stools. Duodenal ulcer most frequent in males; pain in the right hypochondrium or to the right of the parasternal line, comes on two to four hours after meals; no relief by vomiting, latter not frequent; bloody stools (melæna or bright blood more common than blood vomiting; if jaundice is present this would contribute to the diagnosis.

When the ulcer perforates anteriorly there is usually no withholding adhesion, and a rapid invasion of the peritoneum is probable. Great pain is usually felt at the epigastrium, or to the right of this region, and it is often followed by vomiting, and shock may become so severe as to cause death. Peritoneal symptoms rapidly develop, with a tendency in some cases to be localized in the upper part of the abdominal cavity in the right side. When the liver dulness has

been dissipated up nearly to the mammary line, air extravasation may be suspected, and when accepted as present it will aid in making the diagnosis. However, it should not be forgotten that the symptom of liver resonance, unless marked, is so often found to be due to a distended colon that it should not be much relied on.

When a perforation has been diagnosed, **Laparotomy** should be at once performed, and the perforation closed by a double or triple row of interrupted sutures, no attempt being made to excise the ulcer before suturing, as it takes too long a time, and the statistics of simple closure are very good. The peritoneum should be thoroughly and systematically cleansed by carefully wiping out the affected portion. If the infection be limited, follow by gauze drainage; or if the peritonitis be general, thorough irrigation with warm sterilized normal salt solution will be best. If necessary, several openings may be made so as to secure thorough drainage. A healed duodenal ulcer may have sequelæ, such as the resulting cicatrical contraction causing stricture of the duodenum and dilatation of the stomach, and may by traction or primary ulceration damage the bile entrance to the intestine.

Weir closes with an extensive review of all the cases that have undergone operation up till April, 1900. There are fifty-one, and only eight recovered, a mortality of 84·3 per cent.; but it should be remembered that without operative interference the mortality would have been 100 per cent.

John Broadbent[2] describes four cases of duodenal ulcer, and dealing with symptoms and diagnosis, notes that a physical sign which he has not seen mentioned in writings on this subject, except as a result of pyloric stenosis from cicatrization of an ulcer, is dilatation of the stomach. This may occur in association with ulcer of the duodenum, and was present to a marked degree in one of the cases described in which perforation took place, and in which there was no pyloric stenosis.

Turning to the question of differential diagnosis between duodenal and gastric ulcer, he observes that the former is most commonly met with in strong, healthy-looking men, who own they are fond of a glass of beer or spirits; the latter in pale, anæmic women, who are not addicted to stimulants. In duodenal ulcer, the pain is situated in the right epigastric or hypochondriac region; it is not increased or brought on by ingestion of food, but sets in some hours after a meal, or at irregular intervals, and may be constant. Vomiting is not induced by meals, but may set in two to four hours after, or bear no relation to meals; it is not, however, a common symptom.

In gastric ulcer, hæmatemesis is common, and often occurs without melæna; in duodenal ulcer, melæna is more common without hæmatemesis, but neither are met with so frequently as in gastric ulcer. Attacks of pain in the right hypochondriac region, sometimes accompanied by vomiting, may occur in association with duodenal ulcer, and are liable to be mistaken for biliary colic, but the absence of jaundice, and negative result of a search for gall-stones in the stools, together with careful enquiry into the history of the case, will usually serve to make the diagnosis clear.

Bolton[3] describes five cases of perforated duodenal ulcer, chiefly from a surgical point of view. He points out that the symptoms in perforation may simulate very closely those of appendicitis.

REFERENCES.—[1]*Med. News*, May 5 and 12, 1900; [2]*St. Mary's Hosp. Gaz.*, April, 1901; [3]*Med. Rec.*, March 21, 1900.

DUPUYTREN'S CONTRACTION. *Priestley Leech, M.D., F.R.C.S.*

Adams' operation is the one usually performed for this condition, and is fairly successful, but Tubby[1] says it has the following disadvantages: (*a*), The difficulty of dividing all the bands; if these should extend upwards and over the site of the superficial palmar arch, complete division cannot be effected without great danger of wounding the vessels. (*b*,) It frequently happens that more than one operation is necessary. (*c*,) The after-treatment is tedious and troublesome, and often necessitates the use of expensive and complicated apparatus. (*d*,) In some cases the condition recurs. The open method is in suitable cases preferable, but care must be exercised in selecting the patient. Examine the urine for sugar and albumen, and see that the patient is in good health, with good healing power. The advantages of the open method are as follows:—(1,) All the diseased fascia can be completely removed and there is no liability to recurrence. (2,) Treatment is shortened, for as soon as the wound is healed splints can be discontinued. (3,) No expensive apparatus is necessary, thin, narrow malleable iron splints being all that are required. The objections are, troublesome and prolonged dissection; the bands along the sides of the finger are not easy to dissect out except in thin bands, and if the wound becomes septic the results are disastrous. The method is as follows:—The hand is made absolutely aseptic by the approved methods; perfect asepticism is the essence of the whole business. An Esmarch's bandage is placed around the upper arm to prevent oozing, which would obscure things. An incision is made over the most prominent band of fascia, extending from the superficial palmar arch to the root of the finger. In extensive cases this incision can be enlarged by transverse cuts at either

end. The dissection back of the flap of skin without buttonholing it is difficult, and if the fascia is nodular the skin is very thin over it. The skin must, however, be turned back as far as the affection extends. The next point is removal of the fascia · before doing this it is well to define the digital vessels and nerves as they emerge from the divisions, and trace them back by cutting through the thickened fascia towards the wrist. The affected structures can then be easily removed. Where the fingers are involved a small fine tenotome is passed between the skin and the bands on the lateral aspects, and the fibrous tissue is divided. The arrest of hæmorrhage is an important point; the bandage should be released, and any oozing should be checked by pressure or hot sponges. If any arteries spurt, use torsion rather than ligatures. Carefully suture the incision with horse hair. Rigid asepsis must be insisted on until every scab has disappeared; if not, septic infection may occur. If there is much contraction the hand had better not be put up fully extended at first, because of the pain from stretching of the digital nerves.

REFERENCE.—[1] *Lancet*, p. 90, vol. i, 1901.

DYSBASIA INTERMITTENS ANGIO-SCLEROTICA (Intermittent Lameness of Vascular Origin).

Græme M. Hammond, M.D., New York.

Putnam,[1] of Boston, has published a case of this rare condition, first described by Charcot in 1854. The subjects are persons usually past middle life. After walking for from five to ten minutes they are seized with a helpless cramp-like feeling in the legs, which is so severe as to render further progress impossible. After a few moments' rest they can walk again. Careful examination of the legs usually reveals signs of defective arterial supply. One or more of the pedal arteries, and even the popliteal artery, may be pulseless, and the foot, as a consequence, cool and slightly pale, or red, or blue, according to circumstances. As dysbasia intermittens sometimes occurs when the arteries are apparently pervious, vaso-motor spasm has also been suggested as a cause. In Charcot's first case a tumor was found compressing the poplitea artery. The occurrence of the symptoms during exertion may be due to the need of the muscles for an increased supply of blood, or to the induction of vascular spasm. In Dr. Putnam's case the patient, a man seventy years old, suffered from intense pain in the legs every time he walked more than one-eighth of a mile. On resting the symptoms quickly passed away. The pain was usually

felt first in the left calf, then in the right, then it spread upwards, omitting the knees, and becoming centred in the hips. The heart was normal. Pulsation could only be felt in two of the four pedal arteries, and in one of these it was scarcely recognizable. Galvanism and Faradism were applied to the lower limbs while they were immersed in warm water, but no improvement was obtained. The patient then began *kneading* his calves night and morning, and began to improve. Ultimately he could walk one or even two miles without much difficulty.

REFERENCE.—[1] *Lancet*, April 13, 1901.

DYSENTERY. *James Cantlie, M.B., F.R.C.S.*

Types of Dysentery.—Dysenteries are classified under four headings by Osler as follows: Acute catarrhal; Tropical or amœbic; Diphtheritic; and Chronic. Other writers such as Davidson apportion the varieties of dysenteries: (1,) According to prevalence—epidemic, endemic, the dysentery of war and famine; (2,) According to clinical manifestations—acute fibrinous or pseudo-diphtheritic, and chronic dysentery.

ETIOLOGY.—Celli and Fiocca consider that a variety of the colon bacillus, named by them B. coli dysenteriæ, is responsible for the intestinal manifestations of dysentery. Along with this bacillus they found typhoid-like bacilli and streptococci. They produced dysentery in cats by cultures of the colon bacillus, and although other organisms were capable of producing similar results, they gave them less constantly. These observers also prepared a toxin from their cultures which acts similarly to the bacilli.

The part played by amœbæ in causing intestinal ailments is not yet settled; and that the terms amœbic, tropical, and "endemic" are synonymous as applied to dysenteries, is also doubtful.

Flexner,[1] whilst working in the Philippines, found two types of bacillus which appear to be identical with those described by Shiga, and which generally fulfil the same requirements. By the injection of cultures he was able to confer a comparative immunity on animals, and the serum derived from them possessed protective and healing properties. Shiga has also obtained good results from a similar serum. Flexner expects better results from a species of vaccination. His conclusions concerning bacterial and protozoal parasites as a cause of dysentery are: (1,) No bacterial species can at present be regarded as the chief micro-organism in the causation of dysentery; (2,) It is unlikely that any bacterium normally present in the intestine can be regarded as the probable cause of epidemic dysentery;

(3,) Sporadic and epidemic dysentery are probably due to distinct causes ; (4,) The pathogenic action of the amœba coli has not been disproved by the discovery of amœbæ in the normal intestine and in diseases other than dysentery. Tropical dysentery, according to Flexner, consists of a bacillary and an amœbic form, separable in their early and their later stages by their clinical histories, their etiology, and pathological anatomy.

Protective Inoculation and Serum-therapy.—By the use of cultures destroyed by heat or the addition of chemicals (tricresol) it has been found possible to protect small animals from subsequent inoculations with virulent bacilli. Eldridge[2] reports that Shiga obtained good results by using anti-dysenteric serum in human beings suffering from dysentery, the mortality being at the rate of about 10 per cent., whilst in dysenteric patients treated by other means the death-rate varied between 28·5 and 37·9 per cent.

Treatment.—Gordon Watson[3] states that for the dysentery met with in the South African campaign, **Ipecacuanha** appeared to be valueless except in cases of dysentery amongst soldiers from India. He describes the cases of dysentery in South Africa as mostly of a mild type, and found drachm doses of **Sulphate of Magnesia,** repeated every two hours until all blood and mucus had disappeared, the most efficacious. W. Watkins-Pitchford[4] reports that in South Africa he had little success in treating dysentery by the saline treatment, probably owing to the fact that but few of his cases were seen in the initial stage of the disease. **Ipecacuanha** with or without emetine also proved a failure in treatment, probably from the same reason. **Monsonia Ovata** tincture caused nausea and depression, but yielded no curative results. **Perchloride of Mercury, Bismuth,** and **Opium** in combination gave fairly good results. The best obtained by this observer resulted from a mixture consisting of :—

R	Izal	℥iij	Tinct. Chlor. et Morphini	℥viij
	Bismuthi Subnitratis	grs x	Mucilaginis Acaciæ	ad ℥j

To be taken every two, four or eight hours, according to the severity of the symptoms.

Milk as diet in dysentery is condemned, and instead, a fairly generous diet of beef-tea, bread and butter, etc., was found to serve well.

Enemata.—Rectal injections so frequently caused distress, and were productive of so little good in Watkins-Pitchford's experience that they were given up.

J. J. Day[5] contends that the majority of cases termed dysentery met with in South Africa were really acute diarrhœa. Cases of

this nature readily yielded to **Castor Oil** and **Laudanum,** followed by **Pil. Plumbi c. Opio.** The treatment by **Sulphate of Magnesia** was disappointing in cases of some standing. Typical dysenteric cases were treated by :—

℞ Ol. Ricini ℥j | Aq. Menth. Pip. ℥j
Tinct. Opii ♏xv – ♏xxv |

and a daily diet of arrowroot, Oj ; milk, Oiij ; soda water, Oij ; brandy or port wine. When the bowels had been thoroughly cleared out a mixture

℞ Mag. Sulph. ℥j | Aq. Menth. Pip. ℥j
Ac. Sulph. Dil. ♏xv |

was given every hour until the stools became feculent. The concentrated doses of sulphate of magnesia proved more efficacious than the more dilute doses. When the bowels after this treatment continued relaxed, a simple astringent mixture of **Catechu, Tinct. Opii,** and **Acid. Sulph. Dil.** proved efficacious.

Aderhold[6] claims for enemata a useful place in the treatment of dysentery. With the idea of killing the amœbæ he administers by the rectum some one of the following : **Quinine Sulphate,** 1 in 5,000 to 10,000 ; **Perchloride of Mercury** 1 in 5,000 to 10,000 ; **Hydrogen Peroxide,** 1 in 5 to 20 ; **Methyl Blue,** $\frac{1}{10}$ to 1 per cent. The enema should be given once or twice daily, and enemata may be alternated with advantage. The patient should lie on his back with the hips well elevated during the administration.

Treatment by Subcutaneous Injections of Gelatin.—M. A. Pugnat[7] records a case of intractable hæmorrhage from the intestine in a man who had dysentery in Algeria. Two subcutaneous injections of a 2 per cent. solution of **Gelatin** in a physiological salt solution, were given at two weeks' interval with highly beneficial results.

Plehn and R. Ruge[8] find that dysentery yields to small doses of **Calomel.** Plehn's experience was gained in the Cameroons.

F. Goldsmith,[9] writing from Port Darwin, states that in dysenteric stools, besides the amœba dysenterica, the other elements usually seen are mucus or lymph cells ; red blood corpuscles, singly or in rouleaux ; bacteria of various kinds ; and greenish bodies similar to those seen in the substance of the amœba itself, usually embedded among the mucous cells. The green bodies are found in the nucleus of the amœba, and contribute a greenish tinge to the whole organism. Goldsmith is of opinion that the greenish bodies are the real embryonic amœbæ ; and that although amœbæ disappear in twenty-four hours in stools that have been passed and allowed to stand, the green particles remain and may be the generators of dysentery,

but gaining entrance to the human body at a subsequent date through milk, etc., whither they have been conveyed by flies.

W. Leonard Braddon,[10] from experience gained in the Malay states, maintains that **Douching** the colon with several pints of antiseptic solution is a satisfactory method of treating dysentery. His conclusions are: (1,) That the most useful solution is a weak solution of boracic acid; (2,) That the lavage must be copious and frequent; (3,) That **Astringents** and **Antiseptics,** such as bismuth, Dover's powder, and salol, are beneficial when lavage is being carried out; (4,) **Saturated Saline Solutions** administered by the mouth have their place in the treatment of dysentery; (5,) Ipecacuanha is the least useful of medicaments in practice.

REFERENCES.—[1]*Johns Hopkins Hosp. Bull.*, Oct., 1900; [2]*Public Health Reports*, vol. xv, No. 1; [3]*St. Bart. Hosp. Jour.*, Aug., 1900; [4]*Brit. Med. Jour.*, Nov. 10, 1900; [5]*Ibid.*, Jan. 26, 1901; [6]*Ibid.* Jan. 19, 1901; [7]*Gaz. hebd. de Méd. et de Chir.*, Oct. 18,1900; [8]*Deut. Med. Woch.*, No. 14, 1901; [9]*Jour. Trop. Med.*, Nov. 15, 1901; [10]*Ibid.*, May 15, 1901.

DYSPEPSIA (and Disorders upon which it depends).

Boardman Reed, M.D., Philadelphia.

Extraordinary activity continues to be manifested in the discussion of the functional and organic diseases of the digestive system. An avalanche of papers has been published on both the medical and surgical aspects of these affections, since the *Annual* for 1901 went to press; but not a large proportion of them present any important new thought, or reveal any valuable new method of treatment.

Indigestion due to Oral Sepsis.—Among the most valuable of recent contributions to the subject of indigestion is a series of papers from the pen of William Hunter.[1] Other observers have studied most exhaustively the micro-organisms of the mouth, and some have recognised that mucus or pus originating in the mouth, pharynx, or naso-pharynx, and swallowed, was liable to set up disease in the stomach; but hitherto the dangers and frequency of these sources of infection of the stomach, as well as of other regions, had not been clearly established, or the remedy so plainly pointed out Hunter has reported numerous cases of serious indigestion, going on in some instances to a stubborn inflammatory condition which he calls septic gastritis, in which there was at the same time an involvement of the teeth and gums in necrotic or inflammatory processes, with considerable, and in some of them copious, pus formation. These conditions had often persisted for years, and did not yield until by radical measures, including the removal of rotten stumps or roots,

or the disinfection of neglected plates and a proper use of antiseptics and astringents, the oral sepsis was wholly obviated. In some instances the gastric disease persisted for a time even after the application of these local remedies, the mucous membrane of the stomach having become infected, so that it was necessary to prescribe 3 grains of **Salicylic Acid** twice a day, milk diet and counter irritation, or other suitable treatment.

Hunter has gone further, and in a later contribution,[2] insists that pernicious anæmia is often attributable to a toxæmic condition in the digestive tract proceeding from sepsis in the mouth. He reports one striking case of the kind, and has observed several others since January, 1900. He being a recognised authority upon the subject of anæmia—the pernicious form especially—there can be no question as to the accuracy of his diagnosis. The case, fully reported, recovered under a treatment which embraced rigorous cleansing and antisepsis of the mouth, stomach, and intestines, and **Anti-streptococcic Serum,** in addition to a milk diet and the usual tonic measures.

George Herschell[3] has also contributed an important paper on "Oral Sepsis as a Modifying Factor in Gastric Affections." He is quite as emphatic as Hunter in describing the evil effects upon the gastro-intestinal tract of pus produced in pyorrhœa alveolaris or other diseases of the gums and teeth. He thinks that there may be set up by the constant absorption of the toxins of such pus a neurasthenia, and that weakened motor power of the stomach may develop from the same. He urges the great importance of a careful examination of the mouth as a matter of routine in all cases of gastric disturbance.

Acid Dyspepsia from Excessive Secretion of Hydrochloric Acid.—A preponderance of recent papers relative to the stomach treat of those forms of indigestion which result from an excessive secretion of HCl. Besides those based upon careful analyses of the stomach contents, by which such a condition of hyperchlorhydria was actually demonstrated, there were also numerous contributions concerning gastralgia, and other vague conditions of gastric pain from unascertainable—or, at least not ascertained—causes, a majority of which were probably a result of the same secretory disturbance. Added to these are the reports of quite a number of cases in which the diagnosis was spasm of the pylorus or other obstruction of the stomach outlet without any discoverable tumour. In this whole group of cases there is reason to suspect hyperchlorhydria or its frequent results—ulcer or the cicatrix of one involving the pylorus—when no other causation is demonstrable. Not only the very large number

of papers written on the subject, but also the enormous frequency and great importance of this peculiar form of gastric derangement, necessitate consideration of it at some length.

One of the most noteworthy papers on hydrochloric acid excess, is by H. Illoway,[4] of New York. He has made numerous observations on persons supposed to have good digestion, and infers from these that the normal percentage of HCl, in America at least, is considerably higher than the figures given by Bidder and Schmidt as a result of their investigations. He discusses in detail the well known symptoms which usually result from an excessive secretion of HCl, and mentions especially, the frequency with which constipation coincides with it. Of the twenty-three hyperchlorhydric patients observed by him, seven had regular bowels and sixteen were constipated. He considers that in most cases the constipation is the cause rather than a result of the secretory disturbance in the stomach, and has noticed that securing free movements of the bowels has always improved the hyperchlorhydria. Among other etiological factors he includes indulgence in alcoholic liquors, and smoking. He doubts whether mental overwork is often a cause, but considers that certain neurotic conditions, and some forms of cerebral irritation dependent upon prolonged worries, or emotional disturbances of various kinds, may play a part in producing the trouble.

TREATMENT.—Illoway[5] prohibits all alcoholic liquors, smoking, acids, acidulated drinks, sharp condiments, and all foods prepared with vinegar or lemon juice. Unlike Hemmeter and various other writers, he permits a preponderance of articles of the nitrogenous group, including milk, eggs, and meat, preferably beef and mutton. He prohibits tea and coffee, except a very little black coffee at the end of dinner. He forbids all hot dishes, requiring food to be only moderately warm. In the way of medication, he prescribes half a glass of natural **Vichy Water** at about 11 a.m., and between 4 and 5 p.m., with a third half glass just before going to bed when dinner is taken late. When patients are constipated, he has them treated by mechanical methods, including **Massage.** No reference is made by him to the fact which has been observed by several writers, that deep massage of the stomach tends to excite excessive secretion of the gastric glands. He differs from other authorities in doubting that the alkaline saline waters have any influence in lessening the hyperchlorhydria. For cases dependent upon disturbances of the nervous equilibrium, (neurasthenia, hysteria, etc.) he prescribes the usual remedies, including hydrotherapy.

Max Einhorn[6] finds that as a rule hyperchlorhydria responds promptly to treatment. He does not endorse the practice of excluding all starchy foods, nor, on the other hand, does he approve of excluding meat. He tries to strike the happy medium between these extremes. The diet which he usually arranges for those suffering from this form of acid dyspepsia, comprises tender meats, not too highly seasoned, plenty of milk, water and sugar. He directs that they should avoid acids, and restrict the quantity of starchy food, especially potatoes. The great point, he believes, is to have them take their food in small quantities and at shorter intervals. The frequent meals in themselves give relief, since the food ingested takes up the acid and forms with it an acid albumin. Sugar and fats have both been found to diminish the acidity. The medicinal treatment consists in administering alkalies at the time of maximum acidity, *i.e.*, about two hours after meals. One or two teaspoonfuls of **Sodium Bicarbonate** will be found useful for this purpose, or when the patients are constipated, sodium bicarbonate and **Calcined magnesia**; or **Rhubarb, Soda and Magnesia** could be administered with advantage. He also finds great benefit from the use of the **Bromides.** He does not consider washing out the stomach essential in these cases. He has obtained beneficial results from the internal application to the stomach of either faradic or galvanic **Electricity,** and also from spraying into the stomach a solution of **Silver Nitrate.**

M. Mingot[7] concludes as a result of his experiments and experiences, that **Atropine** is not practically of much use, and should be abandoned as a remedy in such cases.

Disturbing Action of Opium and its Alkaloids upon Digestion.— In the *Annual* for 1901, reference was made to experiments by Riegel demonstrating that **Morphine,** contrary to a popular impression, does not impair digestion by lessening the secretion of the gastric glands, except very temporarily, but on the other hand by overstimulating them. Its action in constipating the bowels, is one way in which it disturbs digestion; and it may have also an injurious influence on the functional activity of various of the other glands involved in the digestive process. Other observations in the same line have since been made by a number of physicians. Lépine,[8] of Lyons, has recently carried out a series of experiments which confirm the results of Riegel, and also explain some of his own earlier clinical experiences which were previously inexplicable. Twenty-five years ago, while treating a young lady for gastralgia, he ordered the "black drops" of Majendie, a strong preparation of morphine then

much in vogue. So far from relieving her, these markedly increased her suffering every time that she took them. The experiments since made by him, proved that opium or its preparations tend to increase the gastric secretion, and frequent later observations in the cases of patients with gastric pain resulting from excessive gastric juice, have pointed to the same fact. Their pain has been almost uniformly increased by the administration of opium. He has always found, however, that large doses of **Sodium Bicarbonate**, administered during the digestive period, or if needful, **Atropine**, were sufficient to give relief in such cases. Besides Riegel, he quotes Kleine and Hirsch as having reached the same results through experiments carried out by them.

A. Hirsch[9] sums up the clinical observations of various investigators as showing that, in ordinary doses, the effects of morphine in man are: (1,) Delayed expulsion of the gastric contents; (2,) Initial diminution and later increase of the secretion of HCl, both of which are proportional to the dose; (3,) A dose given hypodermically produces much more marked disturbances than an equal dose given by the mouth.

Intestinal Indigestion.—Oscar Simon, of Carlsbad, and Th. Zerner, have published an important article[10] entitled "Investigations concerning the Digestive Powers of the Fluids in the Small Intestine." They call attention to some long established as well as recently discovered curious and important facts, which have been confirmed by experiments carried out by themselves. These have to do with the influence of certain chemical agents in modifying the digestive activity of the various ferments found in the juices which mix with the chyme after it reaches the small intestine. An understanding of these conditions should be most helpful in curing by drug remedies intestinal indigestion. "All investigators," they say, "agree that even a small content of free mineral acids (Ewald[11] 0·3, Lindberger[12] 0·2, Linnoisier[13] 0·5 per cent.), essentially impair, and finally abolish the action of both the diastatic and the tryptic ferments." In other words any considerable excess of HCl in the chyme when, at the end of the period of gastric digestion, it passes into the duodenum, tends to retard the activity of the juices there encountered, and if strong or persistent enough, destroys entirely the digestive action of these fluids (pancreatic and intestinal juice and the bile). As regards the organic acids, it has been claimed by Hofmeister[14] and others that acetic acid, present in the intestinal fluids, decidedly increases the action of the diastatic ferment, the maximum of sugar formation from the starch occurring when the quantity of this

acid amounts to 0·05 per cent. When the percentage of acetic acid, however, is increased to 0·08, the same ferment loses entirely its starch-reducing power. Lactic acid behaves similarly, but the intestinal contents convert most starch into sugar when the percentage of the latter acid reaches 0·03, and cease to digest starch with a percentage of 0·05. Numerous authors agree that the fatty acids in medium proportion have a like influence upon sugar production, but varying results have been reached as to the effect of the same acids upon tryptic digestion—the solution of the albumins.

Another very curious fact recently observed by Rachford,[15] is that the addition of moderate quantities of alkalies stops the diastatic action of the pancreatic juice, while Kühne[16] finds that the most active proteolysis (tryptic digestion) takes place when sodium bicarbonate is present in the proportion of 0·3 to 0·4 per cent.

It follows from these observations that the administration of soda two to three hours after meals should markedly promote the digestion of fish, meat and eggs, in the duodenum, but interfere seriously with the conversion there of starch into sugar. Then, again, it would seem that vinegar taken at the time when the stomach has finished its work, should promote the completion of starch digestion, but damage or stop altogether that of the meats, etc. Under these circumstances the only safe rule will be to administer neither acids nor alkalies at a time when they can influence the digestive processes in the small intestines, unless we can induce our patients to accept the advice of Sir Lauder Brunton,[17] and take their proteid foods in certain meals by themselves, and their carbohydrates alone in certain other meals.

Simon and Zerner claim to have confirmed in the main the above-noted findings, by experiments with glycerin extracts of hog's pancreas, as well as upon the intestinal juice of a woman in whom a fistula was made because of gastric ulcer. Their conclusion is that normally in the highest part of the small intestine the albuminous foods are chiefly acted upon, and that in the middle and lower parts of the same, the starch digestion is completed. They found the contents of the small intestine, in persons just died, usually alkaline in the duodenum and upper jejunum, but acid in the lower jejunum and ilium. In living patients with an abnormally large percentage of free HCl at the end of gastric digestion, it must often happen that the reaction of the duodenum contents is, temporarily at least, acid, in spite of the alkaline bile and pancreatic juice.

Dyspepsia from Deficient Secretion.—Linossier[18] last year wrote on the treatment of certain forms of dyspepsia, and disparaged

the prescription of **Pepsin and Hydrochloric Acid** as aids in digesting albuminoid food. He doubted that these substances could cure even atonic dyspepsia, still adhering to the now exploded view, that their action upon the stomach is deleterious, by depressing the natural secretion of the glands. Those who have followed the articles upon diseases of the stomach in the *Annual* for 1900 and 1901, must have had abundant proof from a large number of observations and experiments that the exact contrary is true, and that the administration of HCl unquestionably tends in atonic cases, to restore gradually the normal function to the previously depressed glands, not often failing, except when those glands have undergone atrophy. Linossier, however, admits that in certain cases where there is a very distinct lack of gastric juice, HCl may prove a useful remedy, and suggests the following excellent method of combining it so as to avoid any disturbing effect upon the oversensitive gastric mucous membrane :—

The whites of two eggs; sugar, 1 ounce; distilled water, 5 ounces; dilute hydrochloric acid, 8 ounces. Mix the water and whites of eggs, then dissolve the sugar, and finally add the acid gradually in small quantities. Half a teaspoonful of this would represent approximately 15 minims of the dilute acid.

Hemmeter,[19] of Baltimore, advises in cases of depressed secretion in which atrophy does not exist, the washing out of the stomach with 3 to 4 parts of HCl to 1,000 of warm water. He adds that the lavage is not intended so much for cleansing the stomach as for stimulating the mucosa. He also favours the use of HCl in very large doses when necessary, for stomachs having either a very low secretion of that acid, or none at all. As a remedy for improving the appetite, he gives the dilute HCl in doses of 10 to 20 drops in 3 ounces of water before meals. In cases where there is decided fermentation in the stomach, with a deficiency of secretion, he resorts to lavage with a 6 to 1,000 solution of HCl. It seems to be still necessary to caution some medical readers that HCl is contra-indicated when the gastric secretion is normal or augmented, and Hemmeter is careful to do this, referring also to certain cases of gastric hyperæsthesia in which, although the secretion of the acid is deficient, its administration in even small doses, is sometimes not tolerated.

Chronic Gastric Catarrh and Associated Fermentative Conditions.—A notable symposium on this subject was published in the *International Medical Magazine* for June, 1901. Numerous prominent physicians and gastro-intestinal specialists in various

parts of the world, were asked a series of questions relative to the treatment usually followed by them in fermentation with chronic gastric catarrh, and also as to their approval of various remedial measures which are now frequently used in such cases, including lavage, the intra-gastric spray, intra-gastric electricity, the value of antiseptic drugs, and the kind of diet preferred.

Carl von Noorden,[20] of Frankfort, favoured in addition to frequent **Lavage** of the stomach, the administration of harmless antiseptics and regulation of the diet, laying great stress upon frequent small meals, so as to have the stomach finish with each meal as quickly as possible. He gives food every two hours in such cases, and recommends that different things, such as carbohydrates and the albuminoids, should not come together in the same meal. He also avoids giving fluid and solid food together, preferably allowing one meal to consist of fluids, next of solids, and so on. He has seen no benefit from electrical treatment, and as to antiseptic medicines, limits himself now to **Thymol** and **Chloroform Water.** He gives the latter in the dilution of 1 to 50, a full tablespoonful immediately after each lavage. Thymol he administers in wafers, 0·15 to 0·20 grammes after each meal.

W. Soltau Fenwick[21] has found among the chief causes of chronic gastric catarrh in London, the following and in the order of frequency as stated: Chronic alcoholism, chronic phthisis, chronic ulcer, chronic Bright's disease, gastric cancer. In the way of treatment he ascertains the cause of each case, and treats this specifically. Electricity has proved valueless in his experience. He has found antiseptics invaluable, the most certain being **Carbolic Acid, Resorcin, Sodium Salicylate,** 15 grains of the latter being given in a mixture with an alkali and **Carbonate of Bismuth.** The diet should consist of soft, easily digestible foods, with an avoidance of green vegetables, farinaceous material, sugars, and alcoholic liquors. Small meals at intervals of three or four hours.

Max Einhorn,[22] for gastric gas, advises lavage, and when there is much mucus, the intra-gastric spray with **Nitrate of Silver.** He approves of intra-gastric electricity, giving the preference to the faradic current. He has not found much help from the antiseptic drugs. He advises plain foods, not too much meat, no solids, no indigestible substances. For eructations without catarrh, he recommends the **Bitters** and **Bromides.**

Charles G. Stockton,[23] of Buffalo, treats the chronic gastric catarrh rather than the fermentative conditions which result from it. He uses lavage, following it by solutions of **Silver, Bismuth,**

and various sedatives and astringents, either through the tube or by the intra-gastric spray. He has seen benefit from the galvanic current in relieving hyperæsthesia, but rarely uses the faradic current in such cases; has found antiseptic drugs of no special value. He prescribes an unirritating, nutritious, and not too bulky diet, having no objection to carbohydrates or milk if they seem to suit. He believes fermentative conditions unaccompanied by acute infection of the stomach, chronic gastric catarrh, or food stagnation, to be a result of gastric hyperæsthesia.

Allan Jones,[24] of Buffalo, varies the diet with the chemistry of the stomach. When butyric acid is formed, he withholds fats; when acetic acid, he disallows starches and sugars. When HCl is absent, the same should be given as a remedy, and if the disorder persists in spite of lavage, intra-gastric **Electrisation** and astringent lavements, **Pepsin** combined with **Benzo-naphthol, Resorcin, Bismuth Salicylate,** or **Sodium Hyposulphite** may be administered. When there is much delay in emptying the stomach there may often exist some degree of pyloric stenosis due to the tumidity of the mucous membrane about the pylorus, coupled with more or less spasm. In such cases **Magnesia** or **Sodium Bicarbonate,** combined if necessary with **Charcoal,** often affords great relief. When the fermentation is due to hyperchlorhydria, there is usually marked pyloric turgescence and spasm, with notable indigestion of starches. The diet should be at once rigid, and consist of meats, eggs and milk. He has had more success by withholding the carbo-hydrates. He usually finds constipation in this condition, and has found no remedy to afford such striking relief as the following prescription, originally given by Dr. Stockton. One part **Cerium Oxalate,** two parts **Bismuth Subcarbonate,** and four parts **Calcined Magnesia.** One half to one teaspoonful should be given in a glass of water at 10 a.m., 3 p.m., and 9 p.m.

Hemmeter[25] considers that in these cases, and in fact generally, fermentation in the stomach is due to a lowering of its motor function. In treatment nothing can take the place of **Lavage,** the gastric spray being useless for this purpose, though it is of utility as a means of reducing hyperæmia. Intra-gastric electricity he has found useful in restoring the lost muscular tonicity, the faradic current being the best. Where peristalsis is impaired, he uses a strong faradic current of high tension, the positive pole in the stomach, and the negative alternately in the epigastrium and over the spine. He has discarded **Antiseptic Drugs** in such cases, as a result of an extensive experience with them in private and hospital practice. He asserts

positively that they do more harm than good. As to diet, he finds that there is none which will agree well until the peristalsis is restored. If the motor function of the stomach cannot be restored by lavage, electricity, intra-gastric douching and **Strychnine**, he holds that surgical means may have to be resorted to. The diet question, therefore, in gastric fermentation, is not so much a question of what kind of food to give, as how to make the stomach contract, and empty its contents into the duodenum. He would, however, exclude carbohydrates from the diet entirely for a time, and nourish the patient exclusively by proteid food, such as scraped beef, Hamburg steak, calves' brains, egg albumin, etc. When there is an absence of free HCl, this should be supplied after meals.

Benedict,[26] of Buffalo, for the various forms of eructation due to nervous causes rather than to actual fermentation, recommends **Bismuth** locally, and the **Coal Tar** and **Mydriatic Anodynes** internally, and even **Morphine** may be required. He advises also the well-known hygienic, local, and physical measures against super-secretion. For the organic production of carbon dioxide and associated gases which may result from any one of various cases, he maintains that immediate lavage should be employed, with a solution of some efficient antiseptic, and recommends especially a 4 per cent. solution of **Soda and Borax**, diluted about ten times when it is introduced. After the stomach has been freed in this way from detritus and mucus, **Hydrogen Peroxide** should be used freely. In the worst cases he would feed by the rectum for a time in order to carry out the treatment through the stomach more effectively. For fermentation with functional disturbances of digestion, Benedict finds local treatment rarely indicated. When there is a deficient secretion of HCl due to catarrh, lavage with small quantities of hot water, followed by the **Menthol Spray**, is useful.

Turck,[27] of Chicago, for mild cases of chronic gastric catarrh and atony of the stomach walls, with fermentation, approves of gastric lavage, intra-gastric electricity, medication, and diet. In the more severe cases of gastritis, he applies a solution of **Green Soap** with his gyromele, followed by the intra-gastric **Needle Douche.** This removes the thick tenacious mucus loosened by the gyromele and soap solution. He does this preferably to lavage, which, he thinks, weakens the patient by washing out secretions, nutritious material, etc. To obtain the gymnastic effect of lavage, he inserts into the stomach a thin rubber bag empty, and then by filling the bag with water he produces distension of the stomach. This with

the heat stimulation from the water, gives the gymnastic and stimulating effect of lavage.

Ewald's[28] contribution to the symposium above summarized, was considerably delayed, appearing in a subsequent number. He has found the disturbance of the secretory function of the gastric mucous membrane influenced more favourably by the administration of HCl than by any other remedy; but he insists that it must be given in sufficient quantities to make up the deficit. He gives after each meal, three times at intervals of ten minutes, as many drops of dilute HCl in a half-glass of water as the patient can bear, that is, as much as will not produce a too sour taste in the mouth. Even by this method, one does not succeed in bringing up the percentage of acid in the stomach contents to the amount of the normal secretion. When one is accustomed to the introduction of a tube, and desires to carry the administration so far, it is best to pour a ·01 per cent. solution of HCl into the stomach directly through the tube. He has seen in a few cases good results from introducing in this way, twice a day after the principal meals, 300 c.c. of such a solution. Ewald has not usually prescribed pepsin, not finding it necessary; but has often seen very good results from the administration of the pure **Gastric Juice** of dogs, obtained according to Pawlow's method. He recommends highly, also, the bitters, especially an infusion of **Condurango Bark**, for deficient secretion. For increasing the motility of the gastric musculature, he finds nothing so efficient as strychnine, given in the form of a tincture of **Nux Vomica.** He combines 5 grains of the latter tincture with the same amount of the dilute HCl, in the above mentioned infusion of condurango. He also approves highly of **Massage,** when skilfully given, as a valuable help, not only strengthening the motor power of the stomach, but also forcing out in a mechanical way, the contents of the stomach into the bowel, and simultaneously exciting the intestinal peristalsis, so that constipation, the most frequent complication of gastric catarrh, is thereby favourably influenced. In the way of electricity, whenever possible, he employs the intra-gastric method. After thoroughly washing out the stomach and having it filled with water, he introduces one electrode therein, while the other is placed on the surface of the abdomen. As a rule when a stimulating effect is desired, he prefers the faradic current, and when a soothing influence is required, he employs the galvanic current, with the anode in the stomach. The current strength should be from 4 to 5 milliampères, and the length of each sitting three to five minutes. He employs preferably the high tension faradic current with rapid interruptions.

Gastric fermentation he would combat: (1,) By the removal of the fermenting masses; (2,) By a limitation of the fermenting processes; (3,) By preventing new fermentations. These results he would produce by thorough cleansing of the stomach by one of the approved methods, employing solutions of antiseptics especially. Whether the lavage should be performed in the morning or evening, depends upon the individual conditions. One may feel better after a morning, and another after an evening wash-out. As a rule patients experience greater relief when the stomach is emptied of its contents at night, so that the sleep is not disturbed. He favours internal antiseptics, and for this purpose employs exclusively **Resorcin** —its re-sublimated preparation. He gives this in combination with the **Salicylate of Bismuth,** according to the following formula :—

R Resorcin Resublimat. 5·0 | Natrii Bicarbonat. 15·0
Bismuthi Salicyl. 10·0 | Sacchari Alb. 15·0
M. Sig. One small teaspoonful every two hours.

As to diet, Ewald advises especially that patients with chronic gastric catarrh should never eat until they feel completely satisfied, but always stop when the first feeling of satiety comes. He forbids all strong alcoholic and carbonated drinks, but allows a little wine, and advises that the drinking water should be boiled. He gives very minute directions as to the use of the various foods. These do not differ essentially from the usual teaching, except that he distrusts cooked eggs; even raw ones are more often badly borne than has been generally believed. He holds, also, that meat broths, and the so-called red meats, are likewise unsuitable on account of the irritant action of the contained salts upon the mucous membrane. He approves of starch foods, vegetables and the fruits, premising that the first should be dextrinized so far as is possible. Fresh products of the bakery, and also cabbage, cauliflower, etc., are to be avoided. When the motor power of the stomach is deficient, he would have caution exercised with regard to all starch foods, on account of the facility with which they are changed into sugar, and produce fermentation. He does not think highly of milk as an exclusive diet in these affections, both because of the great bulk of it required to nourish the patient fully, and also because it is often badly borne by many patients.

Boardman Reed,[29] of Philadelphia, has reported the results of two series of experiments carried out in his laboratory under his direction. These results pointed to the following conclusions :—

(1,) Perfectly normal stomachs are probably in the minority in large cities, especially among persons employed indoors.

(2,) Stomachs which are normal or approximately so, may be injured (have their secretion lowered) by a simple bitter tonic taken for even a short time.

(3,) Quite moderate doses of HCl administered as a medicine may prove effective in hypochlorhydria, but are likely to do harm in normal stomachs, and certain to aggravate hyperchlorhydria.

(4,) Pepsin rarely produces any good results when given alone, even in persons with weak digestive power, and may then retard the digestion of albuminoids.

(5,) Pepsin and HCl given together, much more frequently do good than either administered singly.

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EAR (Diseases of). *James Kerr Love, M.D.*

. DIAGNOSIS AND GENERAL MANAGEMENT.

The following hints on the diagnosis and management of aural cases are submitted in the hope that they will be useful to the general practitioner, who has seldom time to study special text-books :—

Examination.—In talking to a deaf patient, it should be remembered that sound diminishes in intensity as the square of the distance; it is therefore necessary to speak nine times as loud when a yard from his ear, as when only one foot away. The same law applies, of course, to testing the hearing with a watch; therefore, if the patient hears the watch at 18 inches while you hear it (with presumably perfect hearing) at 36, he has lost not 50 per cent. of his hearing exactly. The appreciation of the human voice is, however, the most important test for hearing, as the tick of a watch is a very high sound, and often not a safe guide. But the practitioner's

mouth or the eyes of the patient should be covered when speech is used as a test, since almost all people who have been long deaf read the lips to a large extent, either consciously or unconsciously, and attribute what they thus gather from visual perception to their hearing.

Pull the auricle upwards and backwards when looking for the tympanic membrane. This manipulation straightens the canal, and permits of the further insertion of the speculum. Choose the largest size speculum which can be got well within the meatus. If too large it will push the skin before it and narrow the view, but if too small it is easily blocked by foreign matter, and in any case shows only a small part of the tympanic membrane.

If scarring, or dense white deposits be seen in an otherwise normal looking membrane, the patient should be asked concerning the occurrence of discharge from the ear in early life. Even although the patient himself has no recollection of such an occurrence, it is, of course, far from certain that it never existed. Neither should the practitioner be satisfied that he has seen the normal tympanic membrane unless he can see the handle of the malleus through it. A patient is not necessarily deaf because his tympanic membrane does not conform to the normal standard. Many patients with normal-looking membranes are very deaf, whilst others with very abnormal ones hear quite well. Should there be great deafness with normal membranes, the naso-pharynx may be suspected in a child, and the internal ear in an adult. (*N.B.*—This rule does not apply to deaf-mutes.)

Two conditions are apt to be visually mistaken for the normal tympanic membrane: (1,) The glistening concave surface of a layer of pus; (2,) The healed internal tympanic wall in an ear from which all membrane has disappeared. The syringe or a cotton tip will wash away the pus and lay bare the surface on which it lay. The probe distinguishes between a hard skin-covered surface and a resilient membrane.

With a speculum, a large forehead mirror, and a good gas flame, or a paraffin lamp, a thorough inspection of any tympanic membrane can be made, either in the consulting room or in the house of the patient. Should the tympanic membrane not be visible under such illumination, and should nothing be discovered to obstruct the view, then probably the speculum is not in the axis of the auditory canal, and exhibits to view one of its walls. Such abnormalities, either congenital or acquired, as really hinder an observer from seeing a tympanic membrane are very rare, but the direction and curve of

the auditory canal vary greatly, and from this cause the speculum often requires a good deal of manipulation.

In any case of deafness, if a vibrating tuning fork be heard much longer with its end placed on the mastoid process than when its prongs are opposite the external auditory canal, the cause of deafness is in the middle or external ear. If, on the other hand, hearing be much better when the fork is opposite the ear, deafness is due to disease of the internal ear.

When testing aerial hearing with a tuning fork, either the flat surface of one blade or the narrow surface of both should be held parallel to the side of the head. There is a position of the fork between these two in which no sound is heard, owing to the sound-waves from the two prongs destroying each other by interference. This will be realised if the sounding fork be turned round on its axis close to one's own ear. A large vibrating tuning fork should be *heard* about as long by a patient with normal hearing, as the hand can *feel* it to vibrate.

Diseases of the Auricle.—The wearing of cotton plugs in the external auditory canal should be discouraged. They are unsightly, and afford no protection to the patient, but harbour dirt, and when it is present, discharge. If the canal must be protected, let it be carefully dressed and plugged like any other sinus. Wounds of the auricle should be treated on general surgical principles. Provided there is skin to cover the cartilage, anything in reason can be done with the auricle.

When the auricle is congenitally absent and there is no external auditory canal, it may be assumed that the deeper parts are also absent, and that no operation, however ingenious, will restore hearing.

An eczema of the auricle should never be treated without searching for, and, if it be found, also treating any discharge from the middle ear. And it should not be forgotten that both boracic acid and iodoform, though generally very useful agents in the treatment of discharge from the ear, are sometimes responsible for eczema of the external auditory canal and auricle.

Always cleanse the auricle and side of the head most scrupulously, before attempting any operation on the deeper structures.

Boils in the Ear or External Auditory Canal.—It should not be concluded that a nipple-shaped swelling on the roof or posterior wall of the external auditory canal is a boil, without enquiring into the history of the case and using the probe. It is quite possible one may be dealing with a mastoid abscess which has opened into the canal.

A boil in the canal should always be opened if the patient will

consent. The operation gives almost instant relief, and no other treatment is of much use. But when relief has been obtained, the probable cause of the trouble should be considered. Boils in the canal are often due to purulent discharges, or the collection of ceruminous or other *debris* towards the distal end of the canal, and the troublesome swellings may probably recur unless the canal be kept scrupulously clean.

Ceruminous Collections in the External Auditory Canal.—When deafness comes on suddenly after sea-bathing, or washing the head, careful examination should be made for a plug of wax in the ear. Often all that has happened is that the wax has been converted into a sort of mud, and has completely closed the canal. This can usually be removed by careful syringing. Nevertheless, a patient should never be promised recovery of hearing because it has been found that his canals are plugged with cerumen, since quite possibly there may be more serious causes of deafness present which cannot be removed.

The syringe should have a long, narrow nozzle, and be directed in the axis of the external auditory canal, the exact direction of which should be ascertained by the help of the mirror and speculum. Never syringe an ear before examining carefully with mirror and speculum. A strong current might otherwise be sent against a bare tympanic membrane, and cause pain or great giddiness.

Never persist in syringing an ear containing a hard, ceruminous plug unless the water begin very soon to return of a brownish colour. If it does not, get the patient to soften the plug for a day or two, and then return for the completion of the operation. Never continue syringing after the water begins to return clear. When this happens, examine with the speculum and see if more cerumen is present. Never send a cold solution into the ear with a syringe.

Foreign Bodies in the External Auditory Canal.—The statement that there is a foreign body in the ear should never be accepted without ocular demonstration. It may have dropped out, or may never have been there at all. On the other hand, foreign bodies may really exist in the ear of patients who have no knowledge of their presence.

No attempt should be made to remove a hard, round, foreign body by means of a pair of forceps. The temptation is great, but the result will only be to push the foreign body further in. The syringe removes most foreign bodies from the ear if it be used skilfully and patiently, but it should be remembered that water swells peas and other vegetable bodies, and, in the case of failure at the first attempt, makes subsequent removal more difficult.

If the foreign body cannot be removed with the syringe, attempt may be made under good illumination by the help of solid instruments; but caution is advisable. It is to be remembered that the attempt may possibly do great harm, and that as such cases are seldom urgent, it is generally wiser to wait. Never introduce a hard instrument into the ear unless under a good light.

If a foreign body gets into an ear already the seat of a suppuration, or if by unskilful attempts at removal a foreign body be driven through the tympanic membrane, it should be removed at once under an anæsthetic.

Acute Suppurative Inflammation of the Middle Ear.—Never neglect to examine the ear in the case of a young child who is restless, constantly crying, and feverish. And if diagnosed, always treat with the most scrupulous care cases of acute suppurative inflammation of the middle ear. It is from these that most of the chronic cases, with their mastoid and brain complications, take their origin. This statement applies with peculiar force to the ear complications of scarlet fever and measles, in which, also, the early and adequate treatment of the naso-pharynx is of the greatest importance. In the early stages of these two diseases the careful treatment of the naso-pharynx will generally prevent middle ear suppuration; and in the same diseases the early treatment of any middle ear suppuration will generally prevent the damage to the deeper structures, which is so apt to make middle ear disease become chronic.

It need occasion no surprise if the perforation in the tympanic membrane of a child a year old cannot be seen; it is sometimes impossible to see it.

In most cases of acute middle-ear suppuration the mastoid cells are already inflamed, and in very many they already contain pus. On the other hand, the mastoid in these cases usually recovers if the middle ear be carefully treated. It is generally pretty safe to tell the patient that the deafness, which is so often present after the cessation of discharge in an acute middle-ear suppuration, will pass away.

It is in the acute middle-ear suppurations of measles and scarlet fever that even careful treatment of the middle ear is most apt to fail, and in which an acute mastoiditis may demand immediate operation. In these cases prompt opening of the mastoid cells generally effects a cure.

No alarm need be occasioned by the local pain and general fever associated with a recent acute suppuration of the middle ear and mastoid. Spontaneous or artificial rupture and discharge of the pent-up pus will bring relief in most of such cases. But similar local

pain and general fever in chronic suppurative middle-ear disease should never be lightly regarded. In such cases it is but too probable that serious mischief is spreading to the brain, or towards the surface of the mastoid process. Acute suppurative middle-ear disease spreads most readily to the mastoid cells, but seldom to the brain. Chronic middle-ear suppuration, on the other hand, often spreads to both mastoid and brain.

Pneumonia and influenza, but especially the latter, are also apt to become complicated with acute middle-ear suppurations; and, in the case of influenza, the middle-ear suppuration is apt to cause acute mastoiditis. The by no means infrequent occurrence of such symptoms in connection with the disease here mentioned, makes it important to remember that local blood-letting by free leeching, or by an incision down to the mastoid process, is a most useful measure in all very acute middle-ear diseases.

Chronic Suppurative Disease of the Middle Ear.—Most cases of this disease have arisen from neglected cases of the corresponding acute affection. Hence it follows that, except in the case of children under two years, the commonest causes of chronic suppurative middle-ear disease are scarlet fever and measles. In babies, however, the cases are usually tubercular in their origin. Extensive disease of the mastoid and petrous bones is common, and the facial nerve is often destroyed.

In a case of "running ear" beginning in scarlet fever or measles a year or more before the aural examination, if a probe be introduced into the external auditory canal in the proper axis, it will impinge on a piece of bare or necrosed bone. If the practitioner were limited to one means of diagnosis in such a case, the probe is the most valuable, but the speculum should always be at hand and used first; and in any case the probe should only be used under a good light.

As a general rule, it is quite unsafe to believe a patient who states that he never had a discharge from his ear. Careful examination must be made with the mirror and speculum, and the practitioner's own eyes and judgment guide him as well as the patient's memory. Many people among the poorer and less cleanly classes have active discharge from the middle ear and do not know it.

In chronic suppuration of the middle ear beginning in scarlet fever or measles, generally the mastoid antrum or the tympanic attic, or both, are also involved. The prognosis, therefore, in these cases is bad unless these recesses be also dealt with; but it is not sufficiently bad to warrant operative interference without a fair trial of less radical measures in the first place. If, after three months of

careful cleansing and drying of the middle ear, there be still discharge, it is best to propose an operation. Before, however, suggesting that the mastoid process be opened, reduce the middle ear to a simple plain walled cavity by removing all remaining pieces of tympanic membrane, and also the malleus and incus, if these bones be within reach. Then continue ameliorative treatment, using some form of intra-tympanic syringe for cleansing the tympanic attic and, if possible, the mastoid antrum. The mastoid operation should not be proposed lightly or without real necessity to a private patient. In most cases he will reject the operation and take the risk.

Chronic Aural Catarrh.—In an adult whose external auditory canal is not blocked with cerumen, who has no suppurative disease of the middle ear, and who has normal bone conduction, the cause of deafness is almost certainly chronic aural catarrh. In a child, on the contrary, the cause will probably be adenoid growth of the naso-pharynx, or enlarged tonsils. For practical purposes, those of prognosis and treatment, there is one question above all others which is important in cases of this disease, *viz.*, the duration of the symptoms. Hence, much improvement can never be promised in a case of chronic aural catarrh of long standing. The nose and naso-pharynx should be most carefully examined in any case of deafness for which an adequate cause has not been found in the ear itself.

Improvement which is going to take place in chronic aural catarrh usually begins soon. Therefore, if, after a few weeks' thorough ventilation of the tympanic cavity, no improvement take place, it is best to be perfectly frank with the patient in regard to the prognosis, otherwise the practitioner may be blamed for continuing useless treatment from unworthy motives. Many such cases are complicated, and it is not to be taken for granted that by straightening the nasal septum, or by otherwise restoring a free air-way through the nose, one can always cure the deafness originally due to causes which have been removed. In most old-standing cases changes have also taken place in the middle ear which cannot be removed, and these latter are the immediate cause of the deafness. An intact tympanic membrane should never be perforated for the cure of chronic aural catarrh, without putting the entire responsibility of the proceeding on the patient.

The Naso-pharynx and the Ear.—Clinically, the middle ear should be regarded as an extension of, or branch from, the naso-pharynx, and most affections of the former are due to extension from the latter When a patient, not yet in his teens, has deafness which varies from day to day, and is a habitual mouth-breather, he has either enlarged

tonsils or adenoid growths of the naso-pharynx, or both, and the latter almost certainly cause the deafness more than the former.

Adenoid growths of the naso-pharynx of a deaf child or young adult should invariably be removed. There are few surgical procedures about which there is less risk, and which are so uniformly followed by a brilliant result. No alarm need be felt at the free bleeding which sometimes follows the removal of adenoid growths of the naso-pharynx. It will almost invariably stop even before there is time to devise any means of controlling it. In the operation for adenoids in children under ten years an anæsthetic should always be used. This permits of the more thorough examination of the naso-pharynx, and the more complete removal of all growths; it also avoids excitement in nervous children. If enlarged tonsils co-exist with post-nasal adenoids, both should be removed, provided the patient be under an anæsthetic. If no anæsthetic be used, the adenoid growths should be removed first, as being the most likely cause of the deafness. Time need never be wasted over any form of inflation in a case of deafness in which adenoid growths of the naso-pharynx exist. These growths being removed thoroughly, there is scarcely ever any need of the inflation bag.

There is hardly any ear disease which may not be *improved*, though many of them cannot be *cured*, by removing any abnormal conditions in the nose or naso-pharynx of the patient. A nasal polypus may cause deafness, as well as a mass of adenoid growths. A "running ear" may be cured by clearing the post-nasal space.

Perforations of the Tympanic Membrane.—It is unnecessary to worry over the particular shape of a perforation; its size and position are of more importance. A perforation, the result of accident or operation, will almost certainly heal if the external auditory canal be kept clean and dry. The best position for a perforation is the lower part of the tympanic membrane. In the upper part it often leads to a necrosed ossicle, and in any case drainage from it in that position is usually bad. In the middle of the tympanic membrane a pin-hole perforation should be enlarged freely in a downward direction, if the discharge of pus is abundant, and if examination by the speculum show that the membrane is bulging.

If a perforation cannot be seen, its presence may be proved by the hissing of air-bubbles when the patient forcibly distends the middle ear with the mouth and nose closed (Valsalva's method); or, when syringing an ear, if fluid drop from the nose or its taste reach the mouth of the patient, the tympanic membrane is perforated. Most of the tympanic membrane may be lost, and yet hearing may be good

for all the practical purposes of life. On the other hand, a small perforation, or a healed perforation, may be associated with changes involving great loss of hearing. Large perforations usually occur in chronic otorrhœa, and where scarlet fever or measles have given rise to the latter there is often little membrane left.

Aural Polypi.—An aural polypus is to be regarded as a piece of modified granulation tissue, the mere removal of which is most unlikely to cure the patient, and may do infinite harm. An aural polypus should never be removed without remembering that its removal will make an opening for the probable absorption of septic material. Therefore, except when the symptoms are urgent, an aural polypus ought not to be removed unless the practitioner also sees his way to remove its cause. In order to avoid, if possible, septic effects, the strictest cleanliness must be insisted upon after the removal of an aural polypus, and, if time will permit, for several days before its removal. An aural polypus is almost always attached to the roof or posterior wall of the middle ear.

Tinnitus Aurium.—The tinnitus occurring in chronic aural catarrh is never to be made light of. Often the patient is more willing to bear his deafness than his tinnitus. If a tinnitus is synchronous with the pulse beats, there is generally no real ear disease. Examination with the speculum should be most carefully made in a case of tinnitus aurium. The removal of a ceruminous mass often cures the tinnitus. If the cause cannot be found either in the ear, the nose, or the throat, and if the patient is not deaf, any defect in the general health should be inquired into, and treatment of that will often cure the affection of the ear.

Deaf-mutism.—It is practically useless to attempt to measure the hearing in an uneducated deaf-mute, as he cannot be made to understand the nature of the tests. But the fact of the presence or absence of hearing can be easily made out. Tests for hearing should be made behind the back of a deaf-mute child, and the expression of his face watched for the evidence that he hears. Any statement by the mother that her child heard in babyhood and has lost hearing since then, without the occurrence of any serious illness, cannot be accepted without real proof. The child was probably born deaf.

No such statement can ever be made as that a deaf-mute will "begin to hear at seven years," or at any other date. Clear the naso-pharynx of all obstruction, and wait. The hearing of the child *may* improve, but the probabilities are against it; and it is to be remembered that nearly all deaf mutes have *some* hearing left. The mother should rather be told to prepare for the education of the child by special

methods. In such education it is not to be forgotten that a deaf-mute is dumb simply because he is deaf, and that the vocal arrangements are usually perfect. If the child become quite deaf before his eighth year, he will almost certainly become dumb also. After that age the amount of speech preserved will be in direct proportion to the amount of attention given to its preservation by practice and training.

Marriage of the really deaf-born is, of course, to be discouraged as much as possible, the affliction being but too frequently hereditary.

Recent Progress in Aural Surgery.

Middle Ear Disease.—Progress in aural surgery during recent years has been on well-marked lines, and has been controlled by the practical recognition of these well-known facts: (1,) The middle ear and its adnexæ are an extension from the pharynx *via* the Eustachian tube; (2,) Once these cavities are filled with pus or contain granulations, they must be opened and made to communicate with one another and with the exterior, as in any other part of the body.

The application of this principle differs in these two sets of cases, *viz.*, recent acute cases, such as follow the exanthemata, in which operation is performed within a few weeks or months after the onset of the suppuration; and chronic cases, in which operation is deferred for many months or years. In the recent cases thorough opening of all the mastoid cells and curetting of the middle ear is generally sufficient to effect permanent cure in a short time. In the chronic cases more must be done. The middle ear must be emptied of all its contents, including one or more of the ossicles, and the whole bony partition between the middle ear and the mastoid antrum must be removed. Thus the middle ear with its attic, and the antrum with the other mastoid cells, are made into one smooth-walled cavity.

After this so-called radical operation, the soft parts may be dealt with in one of two ways: (1,) The mastoid wound may be kept open, and treatment may be carried on through it into the bony cavity of the mastoid, whilst the middle ear may be similarly treated from the external auditory canal—a double channel method therefore; or (2,) The mastoid wound may be carefully stitched at the time of the operation, the posterior cartilaginous wall may be slit up to the concha, and all subsequent treatment carried on *via* the external auditory canal—a single channel method therefore. Many varieties in technique are practised by various operators, some of which will be noticed later on; but on these broad lines almost all

workers seem to be seeking the solution of the problems offered by these difficult and tedious cases.

The first great step in the evolution of this radical treatment of mastoid abscesses was taken in 1873 by Schwartze, who removed the whole of the outer wall of the mastoid shell, and this treatment answers well, as we have seen, in acute cases. In chronic cases, however, it was found that more than this was required. In 1889, therefore, Kuester advised the removal of the whole of the posterior wall of the external auditory canal. This leaves the tympanic attic intact, and this troublesome little recess, containing as it does the bulk of the auditory ossicles, remains in many cases a source of danger in spite of this operation. Stacke therefore proposed to reach the attic by removing the posterior superior bony wall of the canal. But if one stops here, final healing is often hindered by a diseased antrum, so commonly present in chronic otorrhœa. The radical operation therefore seems indicated where, in chronic cases, persistent palliative treatment has failed to secure healing, and where removal of the ossicles *via* the external auditory canal has also failed to stop the discharge.

Various methods have been contrived to secure rapid healing after the radical mastoid operation. The mere slitting of the soft parts along the posterior wall from the tympanum to the concha, and laying the slit walls against the enlarged bony cavity, suffices to heal most cases in from two to three months, provided all diseased foci have been removed. Granulation masses may have to be dealt with by snare or caustic, but there is plenty of room for such after-treatment, and final healing is pretty sure. Various flaps have been cut from the walls of the external auditory canal and from the skin over the mastoid, and these have been turned into the granulating cavity. One of the most ingenious, and a very successful plan, is that of Ballance, described in *The Medical Annual* of 1901. It involves a second operation about a fortnight after the radical operation, at which time a large graft cut from the skin of the arm or leg of the patient is made to line the tympano-mastoid cavity. Milligan[1] suggests some improvements in the detail of Ballance's operation, which, when the cavity is large, gives rapid and good results.

McBride[2] gives an interesting case of acute suppurative otitis media, which, in spite of careful treatment, refused to heal until an abscess in the opposite antrum of Highmore had been successfully treated. In reply to the question, what is the best method of treating middle ear inflammation after spontaneous or artificial rupture has

occurred, McBride expresses his distrust of the method of merely plugging the meatus with aseptic dressing after so far as possible sterilising the canal.

Waggett[3] notices Ostino's method—a modification of Okuneff's—for the diagnosis of mastoiditis. The instrument consists of a couple of auscultating tubes of exactly similar length and composition, armed at one end with aural specula of equal size. The specula are applied closely to corresponding points on the two mastoids, the observer using the other ends in his own ears. A vibrating tuning-fork is now applied to the centre of the patient's forehead. The presence of pus or granulations lateralises the sound towards the affected side. Under the heading of a new method, etc., Andrews[4] describes the same test, applied in the same way and with similar results. Both of these observers differ somewhat from Okuneff as quoted by Broca,[5] who reverses the result of the experiment. Evidently more reliable and accurate observation is needed before results can be stated with regard to auscultation of the mastoid process in disease. It should be noted that Okuneff's test was described so far back as 1893.

Atresia Auris.—Hunter Tod[6] gives three cases of atresia auris congenita, and reviews the literature of the subject. His conclusions are: (1) The deformity is not hereditary and the cause is not known; (2) It occurs rather more often in females, and is more often unilateral than bilateral; (3) One may get accompanying deformities, chiefly due to maldevelopment of the parts in connection with the first and second branchial arches; (4) The labyrinth is rarely affected; the hearing varies, but is present to some extent, though slight. Hearing tests give practically the same results as those in an uncomplicated middle ear affection, but more marked; (5) Embryological, pathological, and clinical observation prove operation to be useless; (6) Something more perhaps can be done by careful non-operative treatment, and by early and assiduous instruction in speaking and lip-reading.

Scarlet Fever and Ear Disease.—Bernhard von Gaessler[7] discusses such complications, and gives the results of twelve *post mortems*. Whilst admitting that the infection may spread along the eustachian tube, his observations lend strong probability to the view that the ear disease is a manifestation of the general infection, and not an extension of the infectious process *in continuo*. Whilst the relatively small number of examinations only permits the expression of a probably invariable participation of the ear in scarlet fever, they show that pronounced inflammatory processes can exist behind a

normal or nearly normal drum-membrane. The present writer[8] narrates a case from which it is pretty clear that the discharge from a running ear following scarlet fever may carry the infection so late as the thirteenth week, and advises that no patient should leave a scarlet-fever ward with discharge from the ear unless the mastoid cells have been previously ablated and all infectious foci removed.

Deafness.—The *role* played by the nose and naso-pharynx in the causation of deafness forms the subject of several papers. Mayo Collier,[9] in a presidential address, advances many good reasons for attending to the nose in the event of its functions as an air-way being interrupted, and says "Chronic deafness is nothing more nor less than chronic eustachian obstruction, due in the great majority of cases to chronic nasal obstruction from turbinal atony or hypertrophy." Much chronic deafness is certainly caused in this way, but the theory does not cover the whole ground, for in many cases of chronic deafness neither exists at the time of the observation, nor is there any history of such atony or hypertrophy. And it is just the cases in which there is no nasal element, which are the most difficult to cure, and which remain the opprobrium of our speciality. On the other hand, Semon[10] appears to consider that *enfant terrible* of modern medicine—the nose—quite insufficient as a cause of the majority of cases of chronic deafness, and is sceptical concerning the asserted great influence of nasal stenosis, without concomitant chronic catarrh, upon all possible ear troubles. One feels that if the nasal theory of chronic deafness were universally applicable, we should not be so helpless as we are in treating this large class of cases. Except in the young, we as a rule fail to greatly improve hearing in the so-called aural catarrh, and that a labyrinthine element so often exists in these cases discredits the theory of its being so universally of nasal origin.

Bezold[11] contributes an interesting paper on testing the hearing function in diseased and healthy ears under these headings: (1,) A description of the apparatus made for Bezold by Edelmann in the continuous tone series; (2,) A description of the method for the examination of hearing: (*a*,) Where a discrepancy exists between the objective otoscopic examination and the diminution of the hearing for speech; (*b*,) Where the middle ear shows no objective changes; (*c*,) In high-grade deafness by means of pipes; (*d*,) In deaf-mutes; (3,) A uniform method of expression for the annotation of our hearing tests. The instrument and its application are scientifically of great interest and importance, but seem too formidable and tedious for every-day work, and the desideratum of hearing-testing

is still a simple instrument giving pure tones of varying pitch and uniform intensity, which can be quickly and accurately applied.

Wagner,[12] of Basel, gives an interesting account of his observations on "The acuteness of hearing before and after radical operations." All aurists know that after the most thorough operations on the mastoid, including the emptying of the tympanum of its membrane, and ossicles, good hearing is often left. Wagner, whose cases were taken from the oto-laryngological clinique of Schwendt at Basel university, subjected fifty-three cases to the following tests: (1,) Test for the lower tone-limit by Appun's forks; (2,) Test for the upper tone-limit by Edelmann's Galton whistle: (3,) Test for hearing duration by air-conduction for a number of tuning forks (4,) Test for hearing of speech; (5,) Test for the hearing duration by bone-conduction, and the ratio of the hearing duration between air- and bone-conduction. These testings cannot be discussed here in detail, but Wagner's conclusion may be stated as a working basis for daily practice. "The changes in the hearing power, which always are but trifling, we may attribute to the condition after the operation—greater or less motility of the stirrup enveloped in cicatricial tissue; more or less dense tissue formation in the niche of the round window. Consequently in such cases, in which the disease in the ear has progressed to such an extent that all the symptoms indicate the necessity for an operation, the hearing power is reduced to such a fraction that, complications excepted, it will not, or only to a very slight degree, be affected by the operation." Wagner indicates that in certain cases the state of the hearing may determine the question of operation, but the present writer considers that except in the case of both ears being in a condition requiring operation, or in the presence of a very high degree of deafness of the second ear, the state of the hearing can hardly be the determining factor, for the radical operation is not to be undertaken unless there be an appreciable risk to life either immediate or remote.

The condition of the hearing after simple exfoliation of the stapes is illustrated by the following case which came before the writer in his clinique at the Glasgow Royal Infirmary. A youth, aged nineteen, presented himself in December, 1901, complaining of some deafness and a little discharge from the left ear. After cleansing the canal, the M.T. was seen to be entire except for a small perforation in its upper and posterior part, through which could be seen a small white body. This was seized by the forceps and an entire stapes extracted, the bone evidently having lain loose in the middle ear, for the only pain that was felt was when the foot-plate of the bone passed through

the perforation. The edges of the perforation bled a very little. After thoroughly drying the ear a little antiseptic powder was blown in. Acute pain was at once experienced; in a few seconds the man was seized with violent giddiness, in a couple of minutes he was vomiting, and within ten minutes he had violent diarrhœa. It was an hour and a half before he could be taken home in a cab. Clearly the internal ear had been disturbed in the absence of the protecting stapes. Three days afterwards the man returned, but as there was practically no discharge, the dressing was not disturbed. In a fortnight he again returned without discharge, and testing of his hearing with the voice showed that on the affected side both conversation and whispered speech were well heard.

In this connection a paper of Gustav Zimmerman's,[13] "On the inadequacy of some of the arguments in favour of Helmholtz's theory of the transmission of sound in the middle ear," assumes practical importance. Zimmerman asserts that all vibrations of sound pass indiscriminately through the tympanic membrane to the air of the middle ear and to the bones of the cochlear capsule, without requiring any conduction through the chain of ossicles. Helmholtz,[14] on the other hand, set himself to prove that the apparatus within the drum of the ear transformed a motion of great amplitude and little force into one of small amplitude and great force, suitable for communication to the fluid in the labyrinth. Zimmerman believes that the membrane and ossicles are a protecting and regulating apparatus to deaden those sounds that are too painful, and to diminish slightly the force of those that are a trifle less intense. The discussion opens a field for the physiologist, the physicist, and the clinical observer, the result of which will be awaited with interest by the surgeon. If the M.T. and the ossicles have nothing but this subsidiary function, the surgeon will with less hesitation remove them, and efforts to clear the oval window of a fixed stapes and supply it with a movable substitute, so as to improve hearing, would proceed upon a physiological basis.

Deaf-mutism.—Bezold[15] subjected the pupils of the Munich institution for the deaf and dumb to very accurate testing, with the most interesting results. He found islands of hearing amounting to, in some cases, only two or three tones, in others extending to as many octaves, in the ears of many of the pupils. These islands were surrounded by an ocean of deafness, and Bezold supposes them to represent uninjured parts of the cochlea which still retain their function. These observations not only are on all-fours with what is often found *post mortem* in the ears of deaf-mutes, but supply a

remarkable apparent corroboration of Helmholtz's theory of the function of the cochlea. Bezold now, after half a dozen years, supplies us with the results of a re-examination of twenty-eight of the pupils examined in 1893. In this set of experiments he used the louder and improved tone-series of Edelmann. Generally the later experiments corroborate the earlier, vouching therefore for the correctness of the first observations, and showing that the conditions present in the internal ears of deaf-mutes are finished and stationary. The result of the examination may be summed up in this way: "The number of totally deaf is less than before. Two deaf-mutes, however, lost considerable hearing in the interval, and it would seem as if we were justified in assuming that some cases always show some advance of the destructive processes in the cochlea. Two children had more hearing than at the first test; the other twenty deaf-mutes showed about the same hearing at both tests, or a moderate increase, averaging six semi-tones." Bezold thinks, as a result of his two examinations, that the youngest deaf-mutes in our institutions may be safely employed for the collection of statistics of the hearing power. He differs from Urbantschitsch in the opinion that even if deaf-mutes are exercised exclusively by speech, the hearing for musical instruments and speech alike is improved even without the use of the former. Bezold thinks his experience proves that even deaf-mutes characterised by excessively defective comprehension for speech despite extensive perception of the tone scale, are very accessible to instruction by speech through the ear. We know that wherever a satisfactory remnant of hearing exists, it can be utilised for the comprehension of the voice by well-conducted instruction, no matter whether the pathological alteration producing the defects of hearing be in the cochlea or at any locality beyond.

It seems to the writer that much of the improvement noted by both Bezold and Urbantschitsch under tone and speech instruction is due not to development of hearing, but to the better understanding and appreciation which practice brings about; but he joins with Bezold in the hope that soon deaf-mutes of all countries will obtain instruction, not only to increase what hearing they have, but that what fraction of normal hearing power they have may be used as a foundation for understanding spoken language. Kickhefel,[16] of Dantzig, gives the result of the examination of thirty pupils of the institution of that town. The examination was conducted during the winter 1898-99, and had reference to the cause of deafness, the presence of adenoid growths, the state of the drum-heads, the

presence of suppuration, etc. A series of tone experiments were made which the author wishes to be regarded as an extension of Bezold's work, and which largely corroborate the latter. Kickhefel found the tubercle bacillus in the discharge from the ears of some of the pupils, and rightly urges this as an argument for the constant oversight of deaf-mute children by a competent aurist. He discusses the disfavour into which Urbantschitsch's oral exercises have fallen in Germany, attributing this chiefly to its having been practised indiscriminately without proper selection of pupils. He does not believe, however, that the results will be of much practical value, because all that can be expected is that the deaf-mutes will learn to make use of the partial hearing they possess.

Several American writers[17] discuss the advantages of **Adrenalin Chloride** as a hæmostatic in operations in the nose. The present writer has used it repeatedly in curetting the middle ear, and has been able to empty the tympanum of granulation, etc., with practically no bleeding. Before using adrenalin (1 in 1,000) the tympanic cavity was anæsthetised with cocaine solution.

The intracranial complications of middle ear disease are discussed by a large number of writers, amongst others by May,[18] Knapp,[19] Ballance,[20] McKernon,[21] Lehr,[22] Joachim,[23] Merck,[24] Witte,[25] Deuch,[26] etc.

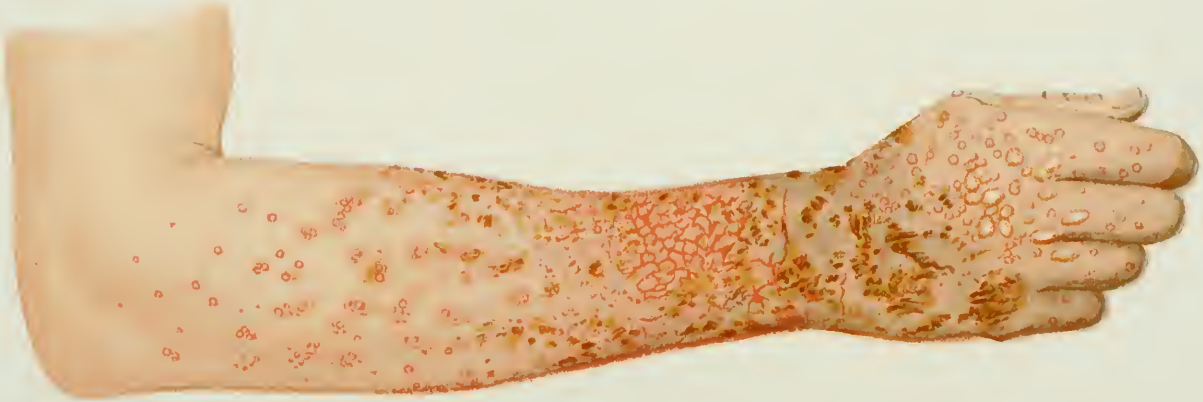
References.—[1]*Brit. Med. Jour.*, Sept. 28, 1901 ; [2]*Lancet*, May 18, 1901 ; [3]*Jour. of Laryngol.*, June, 1900 ; [4]*Jour. Amer. Med. Assoc.*, Jan. 26, 1901 ; [5]*Mastoid Abscesses and their Treatment*, Eng. ed., pp. 52-53 ; [6]*Jour. of Laryngol.*, March, 1901 ; [7]*Arch. Otol.*, Dec., 1900 ; [8]*Glas. Med. Jour.*, Dec., 1901 ; [9]*Jour. of Laryngol.*, Jan., 1901 ; [10]*Brit. Med. Jour.*, Nov. 2 and 9, 1901 ; [11]*Arch. Otol.*, vol. xxix, p. 34 ; [12]*Ibid.*, p. 260 ; [13]*Ibid.*, p. 343 ; [14]*Sensation of Tone*, p. 134, Longman's ; [15]*Arch. Otol.*, vol. xxix, p. 107 ; [16]*Ibid.* p. 185 ; [17]*Jour. of Laryngol.*, Nov., 1901 ; [18]*Arch. Otol.*, vol. xxix, p. 42 ; [19]*Ibid.*, p. 46 ; [20]*Jour. of Laryngol.*, July, 1901 ; [21]*The Laryngoscope*, June, 1900 ; [22]*Arch. Otol.*, vol. xxix, p. 172 ; [23]*Ibid.*, p. 251 ; [24]*Ibid.*, p. 287 ; [25]*Ibid.*, p. 297 ; [26]*Ibid.*, p. 471.

ECLAMPSIA. (See "Thyroid Gland," p. 60, and "Puerperal Eclampsia.")

ECZEMA. *Norman Walker, M.D.*

In last year's *Annual* the subject of eczema was very fully dealt with by Dr. Colcott Fox, who gave an admirable summary of the discussion upon the subject at the International Congress at Paris. Since then the various observers have published more detailed accounts of their work, and others have come into the field with interesting observations.

PLATE XIII.



Eczema.

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Unna maintains his views on the multiplicity of the organisms found in the skin, which he differentiates into several classes according to their method of division. Thus, apparently, those which follow the simplest method of division are the most virulent, and he attributes to two of them, which he weights with the names of *Diclimactericus eczematis albus flavens* and *Monoclimactericus eczematis vivescens*, the principal share in the production of eczema.

Galloway, judging from his remarks at the dermatological section of the British Medical Association held at Cheltenham, has come to the opinion that the primary eczema vesicle is sterile, but that organisms have an important bearing on its future development. He regards almost all the pathogenic organisms found on the skin as simply varieties of the staphylococcus aureus.

Bulkley[1] still supports the general and constitutional nature of the disease, and gives a long list of causes, which is so comprehensive that hardly anything remains. The wonder is that everybody does not have eczema. Dyspepsia, rheumatism, anæmia, kidney disease, lung disease, heart disease, erroneous food, excessive food, deficient food, sedentary occupations, excessive exercise, heat, cold, barometric disturbances, irritants (animal, vegetable and mineral), and parasites (animal and vegetable). It is not reasonable that all these can cause the same disease. After reading the paper one's thoughts turn to Hebra's cynical remarks on such like explanations.

Kaposi[2] lays stress on the importance of realising firstly the fact that the basis of eczema is inflammation of the superficial layer of the skin. Secondly, that eczema can be provoked at will in anyone by mechanical, chemical, or thermal stimuli. Thirdly, the invariable presence of itching with consequent secondary lesions. He concludes by stating that in the presence of actual clinical cases fantastic theories vanish, and that there is little real divergency of opinion as to what should be called eczema; a statement singularly at variance with fact.

Plate *XIII* represents an acute inflammation of the skin of the arm. The patient was a baker, and when the painting was made the eruption had been present about a week. Papules, vesicles, crusts and excoriations are all present. To some authorities such an eruption is indubitably eczema. Others regard it as a dermatitis caused by a definite or indefinite irritant. In this case the irritant was most likely the sugar used in baking. Probably the original irritant stimulates to greater virulence the organisms usually present in the skin, for, as is common in such

cases, this eruption lasted for quite two months after exposure to the irritant.

The most important communication on the subject is that of Bender, Bockhart, and Gerlach,[3] who have conducted an interesting series of experiments on its etiology. Having procured cultures of the ordinary staphylococcus aureus, from furuncles and such-like sources, they proceeded as follows, using their own arms for the purpose: They invariably irritated the part before inoculation, as they found that on the unirritated skin no effects were produced. The skin was scraped and vigorously scrubbed with soap spirit. They inoculated with the following: First, fresh cultures of the staphylococcus taken direct from the tube; second, with the bodies of staphylococci obtained by filtering broth cultures; third, with the filtrates so obtained, and presumably containing the toxin and no cocci; fourth, with a mixture of staphylococci and toxin.

The result of the first inoculation was in every case an outbreak of pustules, the impetigo of Bockhart.

The second experiment, the inoculation of the staphylococcal bodies, resulted in the development of isolated pustules.

The third series, the inoculation with the toxin, was extremely interesting. Ten hours after inoculation excessive itching developed, and when, fourteen hours later, the bandage was removed, the itching was so great that it was impossible to avoid scratching. Following on this appeared small drops of clear serum, which rapidly dried up into brownish-yellow crusts; no pustules were visible. The itching continued severe, and four days after inoculation new papules began to appear round the inoculated area. Ten days after inoculation improvement began, and five weeks after inoculation the skin was again normal. To the other arm turpentine was applied, and the result was an eruption exactly the same as that produced by the toxin. In another experiment the symptoms were longer delayed, two days elapsing before itching appeared. When the bandage was then removed there were two patches of vesicular dermatitis. The contents of some of the vesicles were clear, others were sero-purulent. Cultivations from these latter resulted in the growth of the staphylococcus aureus. The experiments were repeated without any previous irritation, with the same results. They therefore concluded that the filtrate of old broth cultures of staphylococci was poisonous to the human skin, and produced typical acute papular or vesicular eczema, which progressed for some time and spread beyond the region of its inoculation. The primary vesicles they found to be sterile, while the later ones contained the staphylococcus aureus or albus.

Fourth, inoculation of broth cultures of the staphylococcus albus produced practically the same results as those of the aureus, perhaps not quite so severe.

Their final conclusions are that it is not the staphylococcus which produces eczema, but the toxin. They suggest that Unna's theory of chemotaxis explains this peculiarity. The bodies of the staphylococcus attract leucocytes, while the toxin destroys the leucocytes, and therefore has a negative chemotactic action on them. They found in the course of their experiments that staphylococci obtained from the skin, whether normal or eczematous, had very little toxic property.

Martyn read a paper at the Ipswich meeting of the British Medical Association on the treatment of gouty eczema, in which he referred to text-book statements that the internal remedies suitable are gout specifics, and says that personally he has never seen them have the slightest influence in controlling or curing the eczema. It does not appear that this in any way makes him doubt the gouty nature of the eczema.

Malcolm Morris,[4] in a lecture at the Medical graduates' college, January 9th, 1901, which commences with a quotation from Heine and finishes with $\frac{1}{3}$ of a grain of opium three times a day, introduced between these an account of nearly all that is of practical importance in the treatment of the disease. He treats of it at the different stages of life, but eczema apparently lacks one of Shakespeare's seven. The lecture should be read in the original, but one may extract from it a few of the more precious gems. In the infant he rightly emphasises the importance of the little seborrhœic crusts, which it is a too common practice to leave alone. Children's heads should not be covered. The best treatment at this stage is a weak **Sulphur Ointment,** 5 grains of sulphur in an ounce of lard. He does not believe that these cases are largely due to improper feeding. If a **Dusting Powder** is required in a moist case, he recommends one composed of equal parts of boric acid, starch, and oxide of zinc. At a later stage he prefers **Zinc Cream,** the prescription for which is:—

R	Zinc Oxide	ʒvij	Ol. Oliv.	ʒj
	Lanolin	ʒj	Aqua Calcis	ʒj

This requires some care in preparation. The olive oil and lanolin should be mixed together in a bath, then the lime water and the zinc added. If the surface is irritated, $\frac{1}{2}$ drachm of **Ichthyol** to 3 ozs. of the cream may be added. The cream should be applied on linen which is torn up into narrow strips and soaked in it. The whole surface should be covered, and a light bandage applied to keep the

dressing in place. As the strips dry they must be removed and again dipped in the cream.

When the eczema has reached the scaly stage an ointment should be substituted. He condemns the use of boric ointment, for it sometimes irritates badly, and prefers weak **Ammoniated Mercury Ointment.**

On the subject of the influence of teething, Mr. Morris is sceptical. He has seen some of the worst cases before the teething period, and some children who were well during that period and very bad afterwards.

In acute cases in adults he is convinced of the value of **Antimony,** administered in small repeated doses. In the relation of a case he draws attention to an important matter, the condition of irritation of the skin, which often persists for some time after the disappearance of an acute attack, and says that it is at this stage of the disease that benefit is got by a course of **Baths** at a mineral spa. Inferentially he deprecates, in acute or sub-acute cases, long railway journeys in search of treatment which could be better carried out at home.

In varicose eczema he says that no application is so useful as Unna's **Zinc Gelatin,** and he gives full and useful directions as to the method of applying it. For the chronic patches of eczema on the leg he recommends, in order of efficacy, **Salicylic Acid, Resorcin, Pyrogallol,** and **Chrysarobin.**

In eczemas of the aged, the low vitality of the skin makes healing a slow process, and constant irritation acts reflexly on the system, the appetite falls off, and a vicious circle is produced. In such cases he strongly recommends the use of **Opium,** and quotes some other philosopher who has said "it is the drug of the aged, and we must not be afraid to use it."

Leftwich[5] suggests that **Benzine** be used for removing the seborrhœic scales of the scalp. He has used it with great success in several cases, and it seems worth a trial. The purified benzine should be used, for commercial benzine might well prove irritating.

Köbl[6] strongly recommends **Naftalan** as an application specially useful in the eczemas associated with occupation, and Sagebiel[7] found it useful in cases of eczema in the external ear.

Winternitz[8] has continued to treat eczema with success by **Red Light,** the affected area being covered over with thin red silk; the part was then exposed to strong sunlight. In some cases considerable improvement resulted. The various forms of radio-therapy have been experimented with, but nothing very definite is yet to be recorded.

REFERENCES.—[1]*New York Med. Jour.*, Nov. 17, 1900; [2]*Ann. de Derm. et de Syph.*, Aug. and Sept., 1900; [3]*Monats. f. pract. Derm.*, vol. xxxiii, No. 4; [4]*Lancet*, 4-5, 1901; [5]*Brit. Med. Jour.*, Jan. 5, 1901; [6]*Wien. Med. Presse*, No. 37, 1899; [7]*Münch. Med. Woch.*; [8]*Sem. Méd.*, Aug. 15, 1900.

EMPYEMA. *Prof. H. P. Loomis, M.D., New York.*

W. H. White, of Guy's Hospital, in a very interesting article on empyema following lobar pneumonia, concludes from his experience that it is very unlikely that simple **Aspiration** will cure any case of pneumococcal empyema; still it must be remembered that a certain number of cases have been recorded in which it has appeared to be curative. It seems to him that if the empyema is small it is wiser to evacuate it by incision, for if aspirated probably it will, a week or so later, have to be incised, and as it is small and will soon heal up it may as well be incised at once. Also, if the empyema is a large one it is better incised (first of all slowly letting out the pus to prevent cardiac failure), for the patient is seriously and dangerously ill, and therefore it is not right to prolong his illness by aspiration, as that will almost certainly have to be followed by incision in a week or so; Still, in certain cases in which the patient is not very ill, and much objects to an anæsthetic or to an operation, you may at his wish try simple aspiration, if the pus withdrawn by the exploring needle gives a pure cultivation of pneumococci. It is said that children recover more often with simple aspiration than adults.

Edward Martin, of the university of Penn., in an able article on the treatment of empyema, concluded as follows. To summarise the treatment of empyema, the following propositions seem tenable :—

(1,) Empyema is best prevented by promptly evacuating all considerable inflammatory effusions.

(2,) In the diagnosis of these effusions, by means of exploratory aspiration, the skin should be punctured by a tenotome at the point where the needle is to be driven in.

(3,) Serous effusions are best evacuated by aspiration. If they re-accumulate after the third evacuation, they should be subject to continuous syphon drainage; the puncture being made by a small trocar and cannula, the latter being of such size that a small drainage tube may be slipped through it.

(4,) Recent empyemata are best treated by continuous syphon drainage, the tube being introduced through a cannula of at least the diameter of the little finger.

(5,) When, because of a narrow intercostal space or because of constant blocking with fibrinous material, syphon drainage thus

provided is inadequate, an inch of one of the ribs (usually seventh or eighth) should be resected, and a drainage tube the diameter of the thumb should be used.

(6) When the conditions are such that it is obviously impossible for the lung to expand under the influence of syphon drainage and respiratory exercises, Delorme's operation of stripping the pseudo-membrane from the compressed lung should be attempted.

(7) When Delorme's operation is impracticable, a resection of the ribs (Estlander) or of the chest wall and thickened pleura (Schede), corresponding in extent to the size of the underlying cavity, is indicated.

ENDOCARDITIS. (See "Heart.")

ENEMATA (Nutrient). (See "Dietetics.")

ENTERIC FEVER. (See "Typhoid.")

ENTEROPTOSIS. (See "Abdominal Organs.")

EPIDIDYMITIS. (See "Testis.")

EPILEPSY. *Græme M. Hammond, M.D., New York.*

Meyer and Wickel[1] recommend the following modified form of Flechsig's method of treatment: They begin with **Opium** alone, 5 centigrammes three times a day, gradually increased until in six or seven weeks it reaches 9. This maximum dose is given for one day only, after which a **Bromide Mixture** is substituted, made of equal quantities of bromides of potassium, sodium, and ammonium; 6 gramme doses are given at first, which is steadily increased until in a week 9 grammes are given. This quantity is continued for a long time and until definite improvement occurs. Under this method it is necessary that the functions of the skin and of digestion should be carefully regulated. Diet should be light and easily digestible, all nitrogenous foods or beverages being avoided or reduced to a minimum.

In regard to the **Diet** for epileptics, Bálint[2] contributes an important article. His experiments were undertaken in consequence of the theory of Richet and Toulouse that "salt starvation" and the administration of alkaline bromides constituted the more effective form of treatment. He treated twenty-eight cases on a diet from which all chlorides were as far as possible removed, after which a small quantity of bromide was given. The following daily diet-table was adopted: 1 to 1½ litres of milk, from 40 to 50 grammes of butter, 3 eggs, and from 300 to 400 grammes of bread and fruit. The bread was especially made without salt, and with the addition of

3 grammes of sodium bromide per loaf. Living on this diet a patient would consume only about 2 grammes of sodium chloride per diem, a quantity very much below the average in every-day diet, while at the same time he would be unconsciously taking about 3 grammes of bromide daily. The results obtained were highly satisfactory in all the cases. The general bodily health improved rapidly, and the attacks were greatly reduced.

Pelligrini[3] speaks highly of **Nitro-glycerin** as a serviceable remedy. He employed it in fifteen cases. He used the bromide treatment for three months, during which time he kept a faithful record of the number of seizures which each patient had. Then he tried the nitro-glycerin for the same length of time. He used a 1 per cent. alcoholic solution, and of this from 2 to 10 minims in 250 grammes of water were given morning and evening. Except in one case the number and severity of the attacks were diminished. In ten cases better results were obtained than with the bromides. In one case the patient had more attacks than with the bromides. No unpleasant symptoms were observed in any of the cases.

Voisin[4] has contributed a valuable paper on the effect of **Intercurrent Diseases** on epilepsy. He concludes: (1) The epileptic seizures are diminished or restrained by erysipelas during the acute stages of the disease, but the fits return when convalescence is established; (2) In one case of anthrax the convulsions ceased during the suppurative stage, but the patient died from acute septicæmia; (3) In epileptic patients who contracted phthisis the fits subside when the tuberculous process is most acute, and reappear when the phthisis declines; (4) In a few cases of diphtheria the fits were absent during the illness, but returned in convalescence; (5) In small-pox and in rheumatic fever epileptic fits are diminished during the acute stage only; (6) Epileptic attacks become more severe and more dangerous in scarlet fever; (7) Influenza greatly increases the number of attacks, and its pulmonary complications exert a dangerous effect. It tends to develope the status epilepticus. This deleterious result has also been fully shown in a recent thesis by Lannois, of Lyons.

REFERENCES.—[1]*Lancet*, Jan. 26, 1901; [2]*Berlin klin. Woch.*, June 10, 1901; [3]*Brit. Med. Jour.*, June 29, 1901; [4]*Lancet*, May 25, 1901.

EPILEPSY (Colony Treatment). *Fletcher Beach, M.B., F.R.C.P.*

Two classes of epileptics are now provided for in colonies, the insane and the sane. With regard to the first class, no actual accommodation has yet been made in this country, though several

authorities have decided to establish colonies for them. In Germany, on the other hand, attention has been given to their special treatment for some time past, and there are about forty institutions which deal with epileptics. Many of these cases are to be found in the State asylum for chronic lunatics at Dalldorf, near Berlin; in the Alt-Scherbitz asylum, near Leipzig, and in the Wuhlgarten asylum for epileptics, near Biesdorf. The two latter are built on the villa system. The greater number appear to live in villas in the grounds of asylums provided for lunatics, and where they have separate treatment, for up to the present time the Wuhlgarten asylum appears to be the only one provided for insane epileptics.

As regards our own country, the London County Council is about to build on the Horton Manor estate a colony for 300 insane male patients, 127 acres of the estate being allocated to it. The buildings comprise an administrative block, with which are included staff-quarters and an infirmary for patients, a separate block containing the stores and kitchen departments, with the recreation hall adjoining and eight villas for patients. These villas are single-floor buildings, and each will accommodate thirty-six patients and staff in proportion. The Chorlton and Manchester unions have decided to build a colony for imbeciles and epileptics at Langs, near Blackburn; the Leicester board of guardians have acquired a large area of land for the treatment of the same class of cases; and the Lancashire asylums board are about to provide a colony for the insane epileptics of Lancashire.

With regard to sane epileptics, John Bost opened his first home for them at La Force, in France, in 1862. Since then other homes have been added, the last being founded in 1881. The houses cluster round a centre, and have been built on the family system as a family of homes. The Bielefield colony, in Germany, also consists of a number of homes, and accommodates 1,400 epileptic inmates. There are a sanatorium, homes for the education and instruction of epileptic children, homes for the employment of adult epileptics, and quite lately some epileptic imbeciles have been admitted, so that it is not now purely a colony for sane epileptics. Besides this there are the Hochweitzschen and Potsdam asylums for epileptics which are built on the colony system, the essential feature of which is a number of small buildings or villas instead of one large institution. There are many other similar institutions on the continent, and in America there are six, the largest being the Craig colony, which is intended ultimately to accommodate about 1,000 inmates.

The first home in England that was established for sane epileptics is the one at Maghull, near Liverpool, which was opened in 1889 by

Dr. Alexander and others, the colonists resident there now numbering 123. A home of comfort for epileptic women and girls from the ages of two to thirty-five, from all parts of the kingdom, was founded in 1893 by Lady Meath at Godalming, Surrey. About fifty female inmates are accommodated there, all of whom must be able to engage in some occupation. In 1894 the first colony in England was opened at Chalfont, in Buckinghamshire, by the National society for the employment of epileptics. The object of the society is to establish homes where persons suffering from epilepsy, yet capable of some occupation, may enjoy the advantages of regular life, with healthy surroundings, and where, under the necessary supervision, they may, according to their age, sex, and condition, be educated, industrially trained, or suitably employed. The houses have been gradually increased, and there are now seven, all two-storey buildings, with provision for eighteen to twenty-four patients—four for men, two for women, and one for colonists requiring special care and treatment, and accommodating altogether 134 inmates. Mr. Passmore Edwards, to whom the society is much indebted for the purchase of the 135 acres of land on which the houses are erected, and who has himself built one of them, has offered a sum of money for the building of an administrative block, which has been found to be urgently needed; and an anonymous donor has undertaken to build a home for convalescent cases. Another colony for sane epileptics is to be opened at Chelford, in Lancashire, where the Lewis trustees have bought an estate of 460 acres. Dr. Rhodes, who induced the trustees to take up the subject, states that it is proposed to make provision for 200 colonists, and that they will be divided into first, second, and third classes according to payment, as in the German institutions. With the exception of two small institutions which have recently been opened, this is all that has been done for sane epileptics in England, and no provision has been made for them in Scotland and in Ireland. When it is remembered that there are said to be 40,000 epileptics in the United Kingdom, and of these a large number in workhouses, which are certainly not the proper places for them, it will be seen that many more colonies will have to be erected to provide proper accommodation for them.

When epileptics are admitted into a colony it is most important that they should have constant employment of a congenial, healthy kind, and especially out of doors. In the poorer classes of society no attempt is made to teach, instruct, or employ. If the epileptics are in the workhouse, some of them may perhaps help the attendants

in washing, carrying, and bedmaking ; but most of them do nothing, and pass their time in quarrelling, acquiring bad habits from each other, and walking about the ward, until some disease ends their existence. Even in the higher classes of society they are not much better off ; they grow up in idleness and ignorance, and are apt to brood over their isolated and helpless condition. Sometimes they do succeed in learning a trade, but there is great reluctance on the part of employers to take them, and artisans will not work with them if sharp tools have to be used. The consequence of this is that they cannot get employment, and gradually become reduced to such a helpless condition that they are entirely dependent upon their parents and friends for their existence. The adult female epileptic suffers all the disadvantages of the opposite sex, and, in addition, is apt to be led astray by unprincipled men. Epileptic children are often mixed with adult patients suffering from this affection, or are sent to an idiot asylum. If the patient lives at home he requires to be constantly watched, and consequently the man or woman who attends to him loses good wages from being unable to go to work. Many a poor mother who would otherwise go to some employment, or, if she does, is constantly afraid that some accident in her absence will happen to her epileptic child, will be raised from despondency to happiness if the epileptic can be sent to a colony where he will be properly employed.

With regard to the forms of employment which can be, and are, made use of in an epileptic colony, the most important are garden and farm pursuits, because sunshine, fresh air, and the other surroundings inspire the colonists with hopefulness and mental activity. The general health will improve, and instead of being broken-down, helpless, despondent men or women, they will feel that they are of some use in the world, and will lead a happy, contented life. In addition, their labour on the farm or in the orchard will help to supply variety in their food, and this will be useful in the treatment of their affection. Many epileptics, in common with men in the outside world, are fond of animals, and are happily employed in looking after the cattle, farm horses, and in feeding the hens and chickens. Other employments which will be found useful are tailoring, bootmaking, upholstering, carpentering, brushmaking, basket-making, printing, bookbinding, blacksmithing, etc., and men can be thus employed if the weather is too wet for out-door occupations ; while the women will find useful employment in laundry work, dairy work, domestic work, making and mending dresses, knitting and needle-work.

The male colonists at Bielefield are employed in gardening, farming, taking care of stock, raising fruit and garden produce of various kinds; and if the weather should be too bad for work out of doors, there are twenty shops for in-door employment, which includes the trades already mentioned for men, while the women find employment in household work, needlework, and gardening. At Chalfont the men work out-of-doors, under the care of the bailiff, on the farm, orchard, and garden, and look after the horses, chickens, and farm stock. As in-door occupations, there are basket-making, painting, wood-chopping, carpentering, etc., and some help the attendants and nurses in the different homes. The women work chiefly in the laundry, but are also employed in knitting, needlework, and domestic work. The result of this employment and healthy life is that in most cases there is marked improvement; the number of fits become diminished, and the general health is much improved.

As regards epileptic children, the outlook is bright and hopeful. As before mentioned, they are the cause of anxiety to their parents, for they may be knocked down in the street, or be subject to fits there or in the school. If such do occur in the schoolroom, they upset the arrangements and disturb the other children. At the Zurich asylum for epileptics the children are instructed by two male and two female teachers, and there are two departments; one a sort of preparatory school for markedly feeble-minded epileptics, and the other for epileptic children who are fairly intelligent or only slightly feeble in mind. The reports issued by this institution say that the children "learn to muster up and exercise their distracted faculties, to master themselves, to be punctual and obedient, and above all things . . to find pleasure in regular activity, and to regain the confidence which they have lost in their power of performance." As in the case of the adults, so in the children, the fits are fewer in number, and their mental and physical progress is most marked.

No doubt the knowledge of what has been done for these children on the continent has induced the Committee of Council on Education to issue instructions for the education of feeble-minded and epileptic children in reading, writing, and arithmetic, singing and recitation, object lessons, drawing, needlework, and manual training. Older boys have to learn various trades, gardening, and farm work; and older girls cooking, laundry work, housewifery, and needlework. Unfortunately, owing to an act called the Elementary Education (Defective and Epileptic Children) bill, which was passed two or three years ago, epileptic children cannot at present

be received at Chalfont, for by that bill no more than fifteen boys or fifteen girls can be received into a home. A home for boys and one for girls had been built there, each to accommodate twenty-four children, before this act was passed, but they cannot be used for children until this obstacle is removed. It is to be hoped that it soon will be, because at present there is no institution in which poor epileptic children can be educated and trained. One good provision of the bill is that it allows school authorities to make provision for their epileptic children by sending them to some existing epileptic colony, or by building an institution for them themselves ; in the latter case the authorities can make provision for the education of the children.

With respect to diet, the colonists at Chalfont are well fed. For breakfast they have porridge, bread and butter, and tea which is mixed with milk ; for dinner, roast mutton, roast beef, or roast pork, Irish stew, and fish on certain days in the week, together with a variety of vegetables grown on the farm, and farinaceous puddings. Bread and butter, and tea mixed with milk as at breakfast is supplied at tea-time, and rice, tapioca pudding, or soup at supper. No alcohol is allowed, and not much bromide is administered, regular employment being chiefly relied on for the alleviation of the fits. The parents or relatives of a patient wishing to gain admission for him or her into the colony must make application to the Secretary, National Society for the employment of Epileptics, 12, Buckingham Street, Strand, London, W.C.

EPILEPSY (Surgical Treatment of).

Robert Abbe, A.B., M.D., New York.
W. Scott Schley, A.B., M.D., New York.

Tredinnick[1] has collected forty-five cases of epilepsy following cranial injury. The ages ranged from six months to forty-five years. The injury varied from simple concussion to laceration of brain substance and hernia cerebri. Injury was in thirty-three parietal, in eight frontal, in two mastoid, and in one vertex and occipital. It is interesting to note how far from the motor area many of these injuries were received. The duration of unconsciousness varied from a few minutes to thirty-two days. Fits developed immediately or at various intervals up to eleven years.

L. P. Clark[2] has recently summarised the present status of **Trephining** in epilepsy as follows : (1,) Idiopathic epileptics with grand mal should never be trephined ; (2,) Idiopathics with Jacksonian type only when infantile cerebral palsies can be excluded, and when family and personal degeneracy is at a minimum ; (3,)

Traumatic epileptics may be trephined when injury is definitely proved, and stands in direct causal relation, and has not existed more than two years. The earlier it is done after convulsions begin the better the prognosis. Less cases will be operated upon under these rules, but successes will exceed 4 per cent. All operative cases should have **Bromide** treatment for years after. In trephining, large openings should be made, and no attempt made to secure bony occlusion. This should be done for thoroughness of exposure, and to prevent possible increase of intracranial pressure and meningeal adhesions. Operating for the relief of pressure as a primary cause, he thinks should no longer be done. "Notwithstanding this," he says, "Kocher, who has done twelve operations in carefully selected cases of late, has secured six radical cures.* The results were best, he thinks, in cases showing adhesions between the dura and pia. Cheyne and Burghard[3] have recommended the interposition of gold foil to prevent adhesions where it has been necessary to remove the dura. Additional cases operated upon by bilateral cervical **Sympathectomy** (Jonnesco's operation) have been reported, but no statistics of any number of cases have appeared since Jonnesco's[4] own, when out of forty-five cases he reported ten were cured (five free for two years) and six with marked improvement. But with Jonnesco's operation, as with Kocher's, too few cases have been done as yet, and too short a time has elapsed to draw conclusions. Coover[5] believes that sympathectomy in glaucoma simplex is of no service when vision has been reduced to zero, but may be of service in arresting the disease in the earlier stages, and to retain vision before atrophic changes in nerve, retina and choroid have occurred. After myotics and iridectomies have failed it is justifiable.

REFERENCE.—[1]*Brit. Med. Jour.*, Nov. 24, 1900; [2]*Med. Rec.*, Jan., 1901; [3]*Man. Surg. Treat.*, vol. v, 1901; [4]*Brit. Med. Jour.*, June, 1900; [5]*Phil. Med. Jour.*, Mar., 1901.

EPISTAXIS (in Elderly People). *R. Hutchison, M.D.*

Coates[1] describes a series of cases of spontaneous epistaxis in people of fifty years of age and upwards. The attacks were sudden in their onset, profuse, and lasted for several hours, tending to recur for several days. In the five cases which he describes, the sequence of events was essentially the same, *viz.*, (*a*,) Long continued high arterial pressure; (*b*,) Some sudden cause of heart failure, *e.g.*, giving of a valve, or loss of power in the heart wall; (*c*,) In consequence of this a sudden overfilling of the

* See *resumé* of Kocher's communication, in *Medical Annual* for 1901.

venous system, which relieves itself by (*d*,) Leakage. The leakage naturally occurs at the weakest point, and it is probable that the venous sinuses in the noses of these patients had very weak walls.

The most scientific and satisfactory treatment of these cases is to empty the over-filled veins. So long as they are enormously distended with blood the hæmorrhage must continue, unless direct mechanical means are used, and if one nostril be plugged the epistaxis is apt to start from the other. If, on the contrary, we can relax the walls of the arteries and help the enfeebled heart to do its work, it will soon empty the over-filled veins. As a rule this cannot be done by giving heart tonics at first. The heart has been doing its utmost; it has only failed because it has been overworked, and giving a tonic is like spurring a jaded horse. The immediate treatment must be directed to the capillaries and small arteries, as the real cause of the epistaxis lies there, not in the nose. **Nitro-glycerin** is quite effective, **Nitrite of Amyl** might be more so, but one of the more quickly acting nitrites should be used at first; afterwards one of the more slowly acting, as **Erythrol Tetranitrite** or possibly even **Thyroid** tabloids might do as well. When the capillaries and arterioles are dilated and pervious, then comes the time for **Strychnine** or **Strophanthus.** Of course each patient must be considered individually, and there are other ways of keeping down excessive blood-pressure and strengthening a weak heart. In spite of everything, plugging may have to be resorted to in some cases, but in most the hæmorrhage can be stopped without resorting to this procedure.

REFERENCE.—[1]*Lancet*, April 20, 1901.

ERYTHEMA. *Norman Walker, M.D.*

Several cases have been recorded as following on vaccination (*q. v.*).

Brownlie[1] reports a case of erythema nodosum greatly relieved by the application of **Ichthyol Paint,** 2 drachms of ichthyol being dissolved in a mixture of spirits of wine and ether.

Crawfurd[2] recommends a drachm of ichthyol to an ounce of collodion. Generally speaking, the internal treatment by some of the equivalents of **Salicin** is most satisfactory.

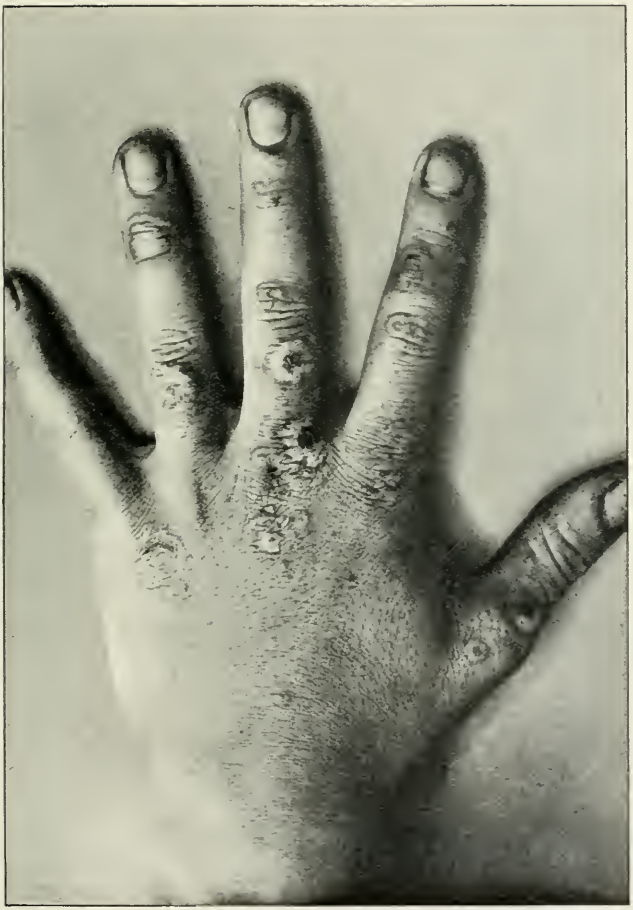
REFERENCES.—[1]*Brit. Med. Jour.*, Jan. 5, 1901; [2]*Therap. Gaz.*

ERYTHEMA IRIS. *Norman Walker, M.D.*

Plate XIV is an excellent representation of this by no means uncommon condition. The eruption appears on the hands and feet, and also on the mucous membrane of the mouth. The appearances

PLATE XIV.

ERYTHEMA IRIS



are very characteristic. The target-like spots do not appear in any other disease of the skin. The disease shows an unfortunate tendency to recurrence. The patient from whose hand the photo was taken, had had between twenty and thirty attacks in the preceding five years.

TREATMENT.—**Salicylates** are often successful in cutting short an attack of the disease, while its frequent appearance when the system is down, indicates the desirability of administering general tonics. If the eruption does not respond to salicylates, **Sulphur** may be tried as an alternative.

EXOPHTHALMIC GOITRE. (See also "Goitre").

Priestley Leech, M.D., F.R.C.S.

Gordon[1] gives a summary of thirty-six cases of this disease in which the **Cervical Sympathetic** has been removed. From a study of the table, bilateral extirpation of the sympathetic nerves would be more successful than unilateral, and the more extensive the extirpation the better the results. He formulates the indications as follows.

(1,) If the syndrome of the disease is the result of mechanical pressure on the nerve (tumours of the thyroid gland, etc.), remove the pressure, and if the symptoms still persist, operate upon the sympathetic.

(2,) If it be the result of reflex influence on the medulla and through the last on the sympathetic nerve from some remote affection, *e.g.*, fibroid uterine tumours, remove such, and if symptoms persist operate upon the sympathetic.

(3,) Abstain from operation if the syndrome of the disease occurs during the course of any spinal or other organic nervous disease.

(4,) If there is no apparent cause operate upon the sympathetic. The operation has not found much favour in England.

(See also "Metabolism").

Græme M. Hammond, M.D. New York.

In an exhaustive review of operations for exophthalmic goitre, Balacescu[2] sums up in favour of total bilateral **Section of the Sympathetic Nerves**, including the three cervical ganglia. Of nineteen cases so treated, ten were cured, five much improved, two were failures, one died under the anæsthetic, and one from an intercurrent disease. Simple section of the sympathetic as practiced by Jaboulay in eight cases, resulted in two cures, five improved, one death. In twenty-seven cases of partial resection of the nerve, nine were cured, eleven improved, there were two failures, and five died. A single case of stretching the nerve by Jaboulay was followed by slight

improvement. Comparing the results of total resection of both sympathetics with partial **Thyroidectomy**, the author finds that in the latter operation sudden deaths are numerous, failures more frequent, and the relief from exophthalmos, tachycardia, and nervousness not nearly so marked.

R. Hutchison, M.D.

Murray disapproves of the use of thyroid medication in this disease. He believes in rest, change of air, **Belladonna** and **Bromides,** with the local use of **Red Iodide of Mercury. Arsenic** is of great value in some cases.

W. Milligan, M.D.

Henich[3] recommends $\frac{1}{60}$ of a grain of **Hyoscine Hydrobromate** and $\frac{1}{20}$ to $\frac{1}{10}$ of a grain of **Picrotoxin.**

REFERENCES.—[1]*Phil. Med. Jour.*, June 23, 1900; [2]*Med. News*, Nov. 16, 1901; [3]*New York Med. Jour.*, 1900.

EXSTROPHY OF THE BLADDER. *Keith Monsarrat, F.R.C.S.E.*

PATHOLOGY.—According to Kirmisson[1] there are four varieties of this condition, only one of which is at all common: (1,) Ectopia of the bladder without division of its walls; (2,) Superior vesical fissure; (3,) Inferior vesical fissure; (4,) Complete extroversion. The one case on record of the first is that related by Gusserow, of prolapse of the bladder through the patent urachus; the second and third varieties are also excessively rare. The usual appearance of the fourth variety is well known.

The most important researches bearing on the genesis of the deformity are those of Keibel[2] and Vialleton.[3] Keibel believes that the ventral wall in the sub-umbilical region is in great part formed by the so-called anal membrane, which constitutes at the same time the anterior wall of the cloaca in which the bladder is about to develop, so that here the bladder and abdominal walls have a common origin. The anal membrane is nothing but the most posterior reflected portion of the primitive streak, and Keibel believes that the dehiscence results from a continuation on to the streak of the primitive furrow and a persistence of this. Vialleton agrees with Keibel in tracing the anterior abdominal wall and the anterior vesical wall to a common origin, but believes this to be a portion of the primitive body wall; the anal membrane according to his view forming the posterior part of the body wall only.

Deformities constantly accompanying exstrophy of the bladder are epispadias and absence of the symphysis pubis. The pubic bones may approach within 2 or 3 centimetres, or may be distant as much as $4\frac{1}{2}$ inches from one another. Other rather common concomitant

deformities are ectopia testis and absence of the prostate. Occasionally the intestine opens through the posterior bladder wall, with congenital absence of the rectum. Broca and Recklinghausen have described cases associated with spina bifida, and in Broca's case there were multiple malformations of the intestine, which ended in a *cul de sac* attached to the posterior bladder wall, cryptorchism, and an umbilical hernia.

TREATMENT.—Surgeons have of late concerned themselves with: (1,) Methods of procedure in which the bladder is preserved and closed by plastic operations; (2,) Methods in which the bladder is sacrificed, and the ureters are brought into the vicinity of a closed urethra or into the vagina; (3,) Methods in which the bladder is sacrificed and the urine diverted into the lower bowel.

(1,) *The auto-plastic methods* of Thiersch and Wood are well known, and are described in full in the text-books. The disadvantages attached to them and to similar methods are, that owing to the growth of hair the wall tends to become covered with phosphates; that the new bladder is not continent; that usually many operations are necessary, and failures frequent. The plan of directly suturing the margins of the bladder, first proposed by Gerdy (Kirmisson), has been elaborated by Czerny, Mikulicz, Rydygier, Walsham, and others. Czerny[4] freely loosened the bladder from all its attachments until it was adherent at its base only, and then sutured the edges together. Mikulicz[5] carries the incisions for freeing the bladder down to the transversalis fascia, along the outer border of the recti, to include the attachments of these muscles either alone or along with a portion of the os pubis.

In connection with the above procedures must be mentioned: (*a*,) Methods which aim at the approximation of the ossa pubis; (*b*,) Methods which devote special attention to the attempt to restore the sphincter vesicæ.

Of the first, Trendelenberg's is the oldest (1885), *i.e.*, osteotomy through the sacro-iliac joints. In 1896 König[6] suggested division of the horizontal and descending rami of the pubes, and displacement inwards of the portions thus loosened. In 1897 Koch[7] substituted osteoclasis for osteotomy of the sacro-iliac junction.

Of the second, Küster incised the penis inferiorly, separated the corpora cavernosa, and after freshening the edges of the dorsal furrow, sutured the corpora cavernosa over the channel of mucous membrane thus made. The lateral incisions through which the mucous membrane was freed were carried upwards along the bladder wall, and a separate suture of the mucous membrane and of the

muscular wall made here. Poppert[8] closed the epispadias, and attempted to form a sphincter by parallel incisions along the urethra gutter, carried upwards along the inferior wall of the bladder for 1½-2 cms.

Next come for mention the procedures by means of which it has been attempted to increase the amount of mucous membrane available for forming the new bladder. Rutkowski[9] opened the abdomen and brought out a coil of ileum ; from this he cut a segment, and after uniting the cut ends and restoring the continuity of the gut, opened the isolated piece longitudinally and thus obtained a quadrilateral flap. The bladder was then detached and the intestinal flap sutured into the defect. The abdominal wall was closed over all. Mikulicz[10] operated in the same way, but did not complete the procedure at one sitting. He used 12 cm. of the lower ileum. He had found, during the course of experiments on dogs, that if he isolated portions of intestine a certain number of such portions atrophied after a time. He therefore left the isolated portion within the peritoneal cavity for some seven months before proceeding to use it to augment the vesical mucous membrane. Mundel[11] suggested the transplantation of sheep's bladder, and carried out his suggestion experimentally on a dog. He placed the flap obtained in between the superficial and deep fascia of the abdominal wall, the mucous membrane downwards and protected from forming adhesions to the deep fascia by a sheet of gold foil ; the other face of the flap becomes attached to the superficial fascia and skin, and after this attachment is firm a flap of skin thus lined is separated up and swung over into position over the front of the extruded bladder.

The question now arises, what results have been obtained by these plastic methods ? The direct suture of the bladder wall is in every way preferable to the covering with skin flaps, and avoids the dangers of incrustation and cystitis ; a receptacle can be satisfactorily formed by Czerny's or Mikulicz's methods. Also, Rutkowski and Mikulicz have shown that it is possible to increase the capacity of a bladder deficient in this respect, and Mundel's suggested procedure would appear to be capable of obtaining the same result at less risk to life. If, therefore, it is possible to make the receptacle continent, the total result would be in every way satisfactory ; but the cases in which this desideratum has been obtained are very few. In one case of Trendelenberg's[12] two hours' continence was obtained. König reported two cases in which continence was said to be perfect, but both died early. Küster had one good result, and Poppert the

same, while Walsham,[13] operating by Mikulicz's method, also obtained a degree of continence.

These cases point to the facts that if any sphincteric action is to be obtained it must be striven after by (*a*,) relief of all lateral tension, and approximation of the ossa pubis; and (*b*,) a careful dissection and apposition of the structures at the base of the penis (Küster, Poppert). If a sphincter can be constructed, the methods of direct suture of the vesical walls (Czerny, or better, Mikulicz and Rydygier), possibly after increase of the vesical capacity (Rutkowski or Mundel), furnish a means of obtaining a useful bladder.

With regard to the existence of material out of which a sphincter may be fashioned there is little anatomical evidence; however, Thierfelder (quoted by Kirmisson) in one case at the autopsy found sphincteric fibres present.

(2,) *Methods in which the bladder is sacrificed* as a receptacle and the urine conducted to the urethra are represented by those of Sonnenberg and of Segond. They have been adopted by those who think it impossible to make a satisfactorily continent bladder by any of the above recorded methods, and who are unwilling to run the risks involved in the conveying of the urine to the bowel. Sonnenberg[14] extirpates the mucous membrane of the bladder, and sutures the ureteral orifices in position at the base of the urethra. Segond[15] uses the bladder mucous membrane to cover in the epispadias, dissecting a broad flap with its base at the trigone and folding it over from above downwards. The objects attained by these methods are the removal or covering in of the exposed mucous membrane and the facilitating the adaptation of a receptacle for the urine. Sonnenberg has operated on seven cases without a fatal result; he considers the method preferable to others in that the formation of a bladder is useless if there is no continence, and in that the amount of mucous membrane for the formation of a bladder of satisfactory capacity is as a rule quite insufficient; on the other hand, he emphasises the danger of pyelonephritis when the urine is carried into the bowel.

(3,) *Methods in which the urine is diverted into the bowel* comprise: (*a*,) Dissection of the ureters and implantation into the sigmoid flexure or rectum; (*b*,) Dissection of the ureters together with a portion of the vesical mucous membrane, and implantation of the whole into the sigmoid flexure or rectum; (*c*,) Formation of a vesico-rectal fistula. The first method was attended with a very high mortality, and has in consequence been abandoned in favour of the second or third, with which the names of Maydl and Frank are respectively identified.

Frank's method[16] has not yet had such a trial as will enable surgeons to form an opinion as to its value. He employed it experimentally on dogs, making a junction between the base of the bladder and the rectum by means of bone plates. It remains to be seen whether the operation is more simple in performance than that of Maydl, and whether it is attended by less danger of pyelonephritis.

Maydl's[17] procedure consists in the separation of the ureteral extremities together with the mucous membrane between and immediately around them, and the fixation of this to the edges of a longitudinal wound made for the purpose in the sigmoid flexure; others have planted the flap into the rectum. Maydl[18] in a recent communication expresses disapproval of the rectal implantation, and also of any attempt to separate the ureters without the portion of attached bladder wall. The results of this procedure in successful cases have been satisfactory, in so far as it has been shown that the rectum is capable of retaining urine for a period of several hours and voiding it under voluntary control. The mortality has been due primarily to shock, and secondarily to ascending ureteritis and pyelonephritis. The latter was responsible for an excessively high mortality when the ureters were directly planted into the bowel; but Maydl's method has very largely reduced this. Illustrative cases are reported as follows: Frank[19] reports a case in which the urine could be held for five hours, and during the night sleep was undisturbed; health was perfect. Ewald, at the same meeting (K. K. Gesellsch. der Arzte in Wien), narrated a similar case where the urine was passed every two hours during the day, and at night was held sometimes for as long as ten hours. Mazel[20] has related two cases successfully operated on by Wölfer, and refers to fourteen others (with twelve successes) during the six previous years. Hartley[21] relates the case of a child, aged three and a half, where he implanted into the rectum; the urine was passed every four hours during the day and once during the night, the child asking for a vessel. Of forty cases operated on by Maydl's method and tabulated by Hartley, twenty-one were reported well at one year, ten at two years, seven at three years, and one at seven years. In spite of Maydl's disapproval of rectal implantation, many successful cases have been recorded. Jaia[22] reports three operated on by Colzi, the patients being in perfect health seven months, a year, and four years after, the anal sphincter holding urine from four to five hours both day and night; he believes that the plan of transplanting the ureteral orifices intact, along with part of the bladder wall, gives considerable security against ascending ureteritis. Petersen[23] has shown how much less

the mortality of Maydl's procedure has proved than that following the axial implantation of the ureters; he also expresses the opinion that Frank's method of vesico-rectal anastomosis will probably still further reduce the mortality.

CONCLUSIONS.—It has now been established: (1,) That by diverting the urine into the lower bowel, continence for an average period of between three and four hours can be obtained; (2,) That the mortality of this procedure is much reduced by preserving the ureteral orifices intact, later operators showing one of about 14 per cent.; (3,) That plastic methods in which the bladder is preserved have so far failed in the great majority of instances to fashion a continent receptacle; (4,) That if by some procedure such a continent bladder can be obtained, the plastic methods available are capable of providing one otherwise quite satisfactory; (5,) That if the methods of diverting the urine appear to be contra-indicated in any case, and it is considered useless to attempt to obtain a continent bladder, the extirpation of the bladder wall and the approximation of the ureters to the urethra facilitate the satisfactory wearing of a urinal.

REFERENCES.—[1]*Traité de Malad. Chir. Congen.*, 1900; [2]*Anat. Anzeiger*, No. 7, 1891; [3]*Arch. Prov. d. Chir.*, Tom. i, p. 233; [4]*Beitr. z. klin. Chir.*, Bd. viii, p. 298; [5]*Ibid.*, Bd. xviii, p. 24; [6]*Verhandl. d. Deut. Gesell. f. Chir.*, 1896, p. 77; [7]*Cent. f. Chir.*, 1897; [8]*Arch. f. klin. Chir.*, Bd. liii, Hft. 2, p. 454; [9]*Cent. f. Chir.*, No. 16, 1899; [10]*Ibid.*, June 3, 1899; [11]*Ann. Surg.*, vol. xxx, p. 715; [12]*Beitr. z. klin. Chir.*, Bd. xviii, p. 32; [13]*Pract.*, May, 1899; [14]*Deut. Med. Woch.*, No. 14, 1899; [15]See Kirmisson, *loc. cit.*, p. 272; [16]*Med. Rev.*, Oct. 14, 1899; [17]*Wien. Med. Woch.*, 1894, p. 25; [18]*Ibid.*, Nos. 6 and 8, 1899; [19]*Ibid.*, No. 43, 1898; [20]*Beitr. z. klin. Chir.*, Bd. xxiii, Hft. 3; [21]*Ann. Surg.*, July, 1901; [22]*Gaz. d. Osped.*, No. 144, 1900; [23]*Jour. Amer. Med. Assoc.*, Feb., 1901.

EYELIDS (Diseases of). *E. H. Holthouse, M.B., F.R.C.S.*

Blepharitis.—Walter L. Pyle,[1] Philadelphia, recommends the following lotion for this disease:—

℞	Boric Acid	grs. xl	Zinc Chloride	grs. ij
	Sodium Chloride	grs. x	Distilled Water	ʒiv

M.

Stain with pyoktanin and doubly filter after standing. A few drops are instilled into each eye three times a day. All scales and crusts should be carefully removed, morning and night. This is sometimes a painful operation, and is accomplished with difficulty in children, but should be thoroughly performed as a *sine qua non* in the treatment. Absorbent cotton sponges moistened with warm water, warm boric acid solution, or warm bichloride solution, 1 to

5,000, may be used to loosen the accumulated secretions. In the eczematous variety, the bichloride solution not only acts as a detergent but also has specific curative properties.

If, on removal of the scales and crusts, the skin is only hyperæmic or inflamed, but not excoriated or ulcerated, the lid is ready for an ointment. If there are underlying small ulcers or abscesses in the hair-follicles, these should be cleansed, the cilia epilated, and the cavities painted with a 2 per cent. solution of **Silver Nitrate**, or lightly touched with a sharp-pointed lunar caustic pencil. The application of oily and fatty substances facilitates removal of the crusts, prevents further occlusion of the palpebral glands, softens the skin, prevents excoriation by the tears, and affords a vehicle for local medication. Care should be taken not to incorporate in the ointment a large amount of any irritating substance. Dr. Pyle generally uses a mild strength of " the yellow salve of Pagenstecher," as follows :

R	Yellow Mercuric Oxide (Amorphous) gr. j	Vaseline	ʒiij

Mix thoroughly and put in a collapsible tube in which it will keep fresh and clean. Ointments of the red precipitate, tar, salicylic acid, resorcin, formalin and other substances have been strongly recommended from time to time, but he has found that when used properly, in mild strength, there is seldom failure to obtain good results from the " yellow salve."

A parasitic form of blepharitis due to the demodex folliculorum has been described by Raehlmann.[2] No previous mention has, he thinks, been made of the symptoms which this acarus gives rise to, and he has been surprised therefore to find that it is by no means uncommon, and that the mature individuals of both sexes live in the hair follicles at the lid margins, apparently in comfort. The demodex adheres to the hair close to the root, and creeps into the sheath of the cilium, its presence giving rise first to a faulty development of the eyelash with an alteration of the secretion of the follicle, and later on, to inflammation of the lid margins also.

Trachoma.—The use of **Iodine** solutions for the treatment of this condition, recommended by Nesnamoff[3] in 1898, is strongly supported by H. H. Seabrook,[4] of New York. He finds that slight cases of granular lids may be cured in two or three weeks, while severe cases may require as many months, but the pannus begins to improve markedly in the first week or two. For mild cases the 1 per cent. solution is applied every other day ; in more severe cases a 2 per cent. solution. Stronger solutions may be made by the addition of ether,

but they are more painful. It is necessary that the iodine should penetrate the conjunctival surface, in order to produce the proper effect. In severe cases with frog-spawn granulations these were scarified or squeezed, and the iodine solution used as after-treatment.

A. Schiele (Kursk)[5] claims to have cured seventy-eight out of one hundred cases of this disease by applications of a watery solution of **Iodic Acid** (IO_3H). The solution used for pencilling the lids had the strength of 5 per cent. To drop into the eye, 2 or 3 per cent. solutions were used. The application caused sharp pain. Experiments seem to show that such solutions penetrate and act deeply upon the diseased tissue.

Mercurol, in increasing strength from a 2 per cent. solution up to the dry powder, has been employed with very favourable results by R. D. Sleight[6] (Michigan). Finally, the employment of **Jequirity,** in the form of its active principle **Abrine,** has been once more brought forward by Prof. de Lafersome and Dr. Painblain,[7] who have made experiments with the object of controlling the resulting inflammation.

Ptosis.—The many operations devised for the removal of this condition are evidence of the difficulty of dealing with it. Probably that of Panas may be considered as the most effectual, but it has the disadvantage of leaving serious scars. Freeland Fergus[8] describes one easy of performance, effectual, and almost free from subsequent cicatrix. Its essential features are: (1,) A single horizontal incision along the whole length of the eyebrow, the scar resulting from which is hidden by the hairs; (2,) The separation of the skin upwards from the tendons and fascia of the occipito-frontalis for a distance of two inches, and its separation downwards with fascia and portions of the muscular structure from the orbicularis and tarsus almost to the edge of the eyelid; (3,) The separation of a vertical band of the tendons and fascia of the occipito-frontalis, three quarters of an inch broad and two inches long, from all underlying structures, the upper end of which is left attached to the muscle; (4,) The fastening of the lower end of this band as near the margin of the lid as possible. The author gives illustrations of the effect of this operation, which caused no difficulty in the closure of the eyes.

References.—[1]*Inter. Med. Mag.*, Oct., 1900; [2]*Deut. Med. Woch.*; [3]*Amer. Jour. Med. Sc.*, May, 1898; [4]*Ibid.*, Aug., 1900; [5]*Cent. f. prakt. Augenheil.*, Ap., 1900; [6]*Therap. Gaz.*, Ap. 15, 1901; [7]*L' Echo Med. du Nord*, Oct., 1900; [8]*Brit. Med. Jour.*, March 30, 1901.

FACIAL PARALYSIS. *Græme M. Hammond, M.D., New York.*

Short[1] details the results of treatment in a number of cases of neuritis of the facial nerve, occurring in the Fallopian canal or just below it, unaccompanied by any disease of the bone. He believes the condition is due to a real parenchymatous inflammation of the nerve-structure itself, and not to pressure alone, the inflammation extending along the nerve outside of the skull, and even invading the divisions on the face, as well as being present inside the bony canal.

The treatment is local, general, and electrical. Local treatment should consist of blisters or other forms of counter-irritation applied behind the ear, the earlier in the course of the disease the better. With respect to the general treatment, **Iodide of Potassium** in doses of 5 grains three times a day may be given, but in the author's opinion accomplishes very little. At the end of the first fortnight, **Strychnia** should be given, and continued until the muscular contractions are almost as good as those upon the sound side. It may then be discontinued. By far the most valuable treatment consists in the application of **Galvanic Electricity.** By this means the muscular nutrition is maintained until voluntary action returns.

REFERENCE.—[1] *Jour. Nerv. and Ment. Dis.*, Nov., 1901.

FEMUR (Curvature of Neck). (See "Coxa Vara.")

FILARIA AND FILARIASIS. *James Cantlie, M.B., F.R.C.S.*

Filarial Abscess.—J. Preston Maxwell[1] classifies the abscesses due to filarial infection met with in the human body, into filarial abscess: (1,) Of the scrotum localised as (*a*,) suppurating hydrocele; (*b*,) abscess of the cord; (*c*,) abscess below the testicle; (2,) Of the limbs; and (3,) Intra-abdominal or intra-thoracic. Dr. Maxwell is inclined to ascribe the majority of these abscesses to blocked lymphatic vessels, and not to the death of a parent worm, which he failed to find in these abscesses. The treatment of the abscesses when they occur in the limbs or scrotum is incision and free drainage. Large abscesses are frequently followed by troublesome contracture of the lower limbs. Malarial and filarial parasites were occasionally met with in the same individual.

Transmission of Filaria.—Ever since Dr. J. C. Low,[2] working at the London School of Tropical Medicine, demonstrated the young filariæ in the proboscis in sections of the culex ciliaris obtained from Australia, careful investigations have been made for the purpose of ascertaining how the embryo filariæ were inoculated by the mosquito into the blood of human beings. Capt. James, I.M.S.,[3]

working in India, showed that in anopheles rossii the embryos of filaria bancrofti were capable of development, and in the latter stage of metamorphosis eventually reached the labium of the proboscis. The question now comes to be, how do the filariæ escape from the strong chitinous case of the labium? Grassi and Noe[4] believe that owing to the bending of the labium stuffed with filariæ when the mosquito pierces the skin with the stylets, is brought about the rupture of the integuments at the bend made in that organ near its centre, thereby allowing the escape of the filariæ along its dorsal groove. In opposition to this theory J. Everett Dixon[5] describes a weak spot in the chitinous exo-skeleton of the labium of the mosquito which, becoming bulged by the young filariæ abutting against it, would rupture at the time the mosquito bites. In this way he accounts for the inoculation, by the mosquito, of the human being. The situation of the "weak spot" is, when the mosquito feeds, practically over the point of puncture of the epidermis.

Filaria volvulus (Leuckhart).—W. T. Prout[6] describes a specimen of filarial worm found in Sierra Leone and recognised by Hood. The worm was found amongst a semi-purulent fluid in the gluteal region on two occasions, and has certain points of resemblance with filariæ nocturna and diurna, but is somewhat smaller and has no sheath. The embryos of this worm bear the following characteristics: Length, 0·25 mm.; breadth, 0·005 mm.; sheath, absent; head, undescribed; tail, sharp; body, central granular aggregation; V-spot, clear spot. After the removal of the mass no embryos were found in the blood, but whether these facts bear the relationship of cause and effect is extremely doubtful and very unlikely.

H. A. Lothrop and J. H. Pratt,[7] of Boston, U.S.A., report on two cases of filariasis met with in the City of Boston hospital. Both patients had resided in Barbadoes. The patients were operated on for lymphatic varices and chylous hydrocele, with removal of adult worms. The paper gives an excellent summary of the subject of filariasis, and the surgical treatment of the ailments appertaining to the disease.

Filaria and Mosquitoes.—G. C. Low,[8] whilst engaged in a special mission sent out by the London School of Tropical Medicine to investigate the relation of mosquitoes to filaria, and the mode of dealing with filarial diseases, found ample proof of the power of the mosquito to propagate filarial ailments. Low found malaria to be non-existent in Barbadoes, and that anopheles mosquitoes, the definitive hosts of the malarial parasite, are not present in the island. On the other hand, filarial diseases abound, and the culex fatigans,

one of the suitable intermediate hosts of filaria nocturna, abounds there. It is believed that by methods similar to those employed in the extermination of malaria-spreading mosquitoes, filarial diseases can be eradicated in Barbadoes.

REFERENCES.—[1]*Brit. Med. Jour.*, Sept. 9, 1901 ; [2]*Ibid.*, June 16, 1900 ; [3]*Ibid.*, Sept. 1, 1900 ; [4]*Ibid.*, March 3, 1900 ; [5]*Ibid.*, Sept. 7, 1901 ; [6]*Ibid.*, Jan. 26, 1901 ; [7]*Amer. Jour Med. Sci.*, Nov., 1900 ; [8]*Jour. Trop. Med.*, Sept. 2, 1901.

FRACTURES (Neck of Femur). *Priestley Leech, M.D., F.R.C.S.*

Davis[1] records two cases of un-united intracapsular fracture of the neck of the femur, on which he operated. His method is as follows :—The joint is exposed by an anterior incision, and is opened by removing the part of the front of the capsule that lies between the limbs of the V-shaped ligament ; the surfaces of the fragments are freshened by gouge and curette. A second incision is made directly over the great trochanter, and the fractured surfaces being brought together by assistants making extension and counter extension, two stout steel pins were driven through the upper end of the femur on into the neck and the head. The outer ends of the pins were left projecting from the wound. Some suppuration took place along the pins, but the patient recovered, and three weeks after operation, could walk well, and with the exception of some limitation of abduction, the movements of the joint were good. In the second case, ivory pins 2½ inches long were used, and the posterior wound closed over them. In this case no suppuration occurred, and sound union took place. In both cases the patient was young (thirty-eight and thirty-five respectively).

REFERENCE.—[1]*Univ. Med. Mag.*

FURUNCULOSIS. *Norman Walker, M.D.*

Russlow[1] says that in addition to infection by staphylococcus, there are predisposing factors concerned. Sometimes these are local, sometimes general. Treatment must always be tonic. He has tried **Arsenic** and **Yeast** internally, but he pins his faith to **Sulphur** which for the last twelve years he has used in suitable cases. It does best with vigorous, well-nourished individuals. At first he gives from ½ to 1 teaspoonful of the flowers of sulphur every morning, and later the dose may be increased.

REFERENCE.—[1]*Med. Obosrenje*, Sept., 1900.

GALL-BLADDER (Surgery of). (See "Liver.")

GASTRIC ULCER. *R. Hutchison, M.D.*

Payne,[1] in a paper on the problems of gastric ulcer, deals with the question of treatment thus :—

In acute cases, when profuse hæmorrhage is the marked symptom, the principles of treatment are clear enough. We want to give the injured organ the most complete physiological and mechanical rest. Besides perfect quiet and inactivity, we have to put the functions of the stomach, if possible, into complete abeyance for as long as possible. The only absolute method of doing this is to withhold all food by the mouth, and sustain the strength as far as possible by **Rectal Feeding**. Experience has shown that life may be sustained by this method of feeding, though it is, after all, but a slow starvation. A great step has been made by the introduction of peptonised foods. It is probable that milk alone is hardly absorbed by the rectum, and beef-tea, which was formerly given, we now know hardly deserves the name of a food. Eggs, whether it is the yolk or the albumen that is absorbed, appear to give better results. He has come in the end to trust almost entirely to peptonised foods.

It is usual to interdict not only food of any kind, but even water by the mouth; and try and relieve the sensation of thirst by giving the patient small lumps of ice, as recommended in every text-book. He maintains, on the other hand, that **Water**, given in small quantities by the mouth, is not only not injurious, but decidedly advantageous. Ice does not really relieve thirst, and the quantity of water represented by a little lump of ice is absurdly small. Moreover, the patient who drinks water is able to support life under rectal feeding much longer than without. Rectal feeding for one week without water is a severe strain upon the bodily strength, and some patients cannot even bear it as long as this; but if they are allowed to sip water in moderation, they can bear a fortnight's rectal feeding without more inconvenience than most patients find after one week without water. The danger in rectal feeding is not emaciation or want of nutrition generally, but failure of the heart. Great care is required to avoid this accident. The patient must not be allowed to sit up, especially suddenly, nor to move for any purpose. With these precautions, and allowing water by the mouth, he has often prolonged rectal feeding for a fortnight or longer. The mere act of swallowing has been shown to be a stimulus to the heart, and giving water by the mouth has this advantage among others.

In regard to drugs in the treatment of gastric ulcer, the most useful appear to be salts of **Bismuth**, and next, **Nitrate of Silver**. Their action is, of course, entirely local, and their suitability appears

to depend upon the fact that they are not absorbed (or, in the case of silver, very slowly), and, therefore, unlike salts of zinc and lead—the local action of which is the same or stronger—they do not produce vomiting or any general toxic effect. The results of treatment are certainly encouraging. The large number of cases with severe hæmorrhage and other serious symptoms which recover, is satisfactory evidence of the success of treatment before perforation has occurred. When this terrible accident has actually occurred, no method gives any chance except an operation and suturing the perforation with surgical precautions, which need not be dwelt upon here (See "Stomach, Surgery of.")

Stewart[2] recommends in acute cases: (1,) Rectal feeding for a period varying from one to three weeks. (2,) In cases in which the stomach tube can be used with safety, irrigation with a 1 in 1000 solution of **Silver Nitrate**, followed by the introduction of **Bismuth.** (3,) Hot or cold **Compresses** to the epigastrium, and, if anæmia be present, the administration of **Iron** per rectum. For vomiting he relies, besides the above measures, on **Cerium Oxalate, Morphine**, or **Bromides**, given by the bowel. For hæmorrhage he recommends complete mental and physical rest, ice to the epigastrium and to suck, and in extreme cases, lavage with ice water. He has no faith in ergot. For collapse he uses **Hypodermoclysis** and the injection of **Strychnine.** Mouth feeding is begun very gradually; preferably not for a week after vomiting and localised pain have disappeared. He relies at first upon peptonised milk gruel and one or other of the patent proteid foods, *e.g.*, plasmon, tropon, or somatose. After two weeks or longer the diet is gradually increased.

References.—[1]*Brit. Med. Jour.*, Sept. 29, 1900; [2]*Ther. Gaz.*, May 15, 1901.

GLANDULAR FEVER. *Edward W. Goodall, M.D.*

Glandular fever is an acute infectious disease, occurring in localised epidemics, of which the chief symptoms are pyrexia, and painful enlargement of most, if not all, of the lymphatic glands. The onset is sudden, with pain in the neck, a temperature of 101° to 104° F., vomiting, etc. Two or three days later the lymphatic glands in the neck become swollen, and subsequently those in other regions of the body. The bowels are nearly always constipated. Occasionally, also, there is tonsillitis, and the liver and spleen are enlarged. Usually the fever abates in a week or ten days. According to Hainebach,[1] in this last class of case the disease may be prolonged for several weeks owing to the occurrence of one or more relapses. The only com-

plication of any importance is nephritis. Hainebach is of the opinion that the disease is not *sui generis*, but is perhaps caused by such micro-organisms as are found with tonsillitis, *viz.*, strepto- and staphylo-cocci.

REFERENCE.—[1] *Deut. Med. Woch.*, June 29, 1899.

GLAUCOMA. *E. H. Holthouse, M.B., F.R.C.S.*

Simple Glaucoma.—The differentiation of this from the chronic inflammatory form of the disease has been discussed by Richardson Cross,[1] who has pointed out the difficulties that arise in regard both to accuracy of diagnosis and to treatment. In glaucoma simplex many of the objective symptoms of glaucoma are absent. There is no pain or inflammation, and no peculiar appearance of the eyeball. The scleral veins are little, if at all, enlarged; the pupil is normal, or but slightly dilated or sluggish; the aqueous chamber is but slightly shallowed, and the eye-ball tension may be scarcely raised. There may be no subjective symptoms of defective eyesight, and central vision is often practically normal. The ophthalmoscope and the perimeter are required for the recognition of the real nature of the disease. A pulsating artery or a deep and typical cupping of the optic disc may be found, but the appearance may be less characteristic, and cause doubt whether the case be one of insidious glaucoma or of optic atrophy. Moreover, it is commonly found that simple glaucoma, especially in its later stages, is complicated by atrophy. The perimeter therefore is of special value in helping to distinguish between the two diseases. Defect in the nasal portion of the field of vision is strong presumptive evidence of glaucoma. The colour sense is usually retained in glaucoma until late in the disease, whilst it is early impaired in atrophy. Since progressive simple glaucoma will sooner or later be complicated by atrophy, operation, to be of service, should be done before the limitation of vision approaches dangerously near the centre of the field. But since no great urgency appears to exist during the indefinite symptoms of incipient or simple glaucoma, it is not everyone who will face the risk of an operation upon an eye whose vision is practically perfect, and of which no definite complaint is made. A slight simple glaucoma may perhaps occasionally be cured by the use of **Myotics** under favourable circumstances, and it is justifiable to continue such treatment until there is definite evidence that tension is increasing, but as a rule a favourable result is not to be expected without operation, when once the symptoms have become definite.

M. Rogman[2] (Gand) has reported five cases of simple chronic glaucoma operated on by iridectomy, and subsequently observed for periods varying from six to twelve years. In two cases one eye was submitted to iridectomy, and the continued use of a myotic was tried in the other. In all the cases, favourable results followed iridectomy. In one of the cases in which one eye was operated on the vision was retained without further impairment after six years, whilst the eye submitted to a myotic, though it had been the better of the two, became entirely blind in two years. In the other case the eye operated on retained its vision ; the vision of the other eye slowly deteriorated until, ten years later, iridectomy was done on it and apparently arrested the course of the disease.

Excision of the **Cervical Sympathetic** as an alternative to iridectomy in chronic glaucoma has been performed in two cases by Angelucci.[3] In each case good results followed. In one of these, vision improved from $\frac{6}{60}$ to $\frac{6}{12}$, and the tension fell from + 1 to normal. In the other the vision rose from $\frac{6}{24}$ to $\frac{6}{6}$. In the former case, subsequent to the operation, sensation of heat at the top of the head, and vertiginous attacks became troublesome at times. In the latter some loss of power in the corresponding arm ensued, and certain effects of vascular dilatation, previously present, were aggravated, but the local eye conditions in both instances were considerably improved.

The same procedure is advocated for the same class of cases by J. M. Ball.[4] Its difficulty of performance, and its danger to the life of the patient through cardiac disturbance, are insisted on by M. E. Valude[5] (Paris) who has tried the sedative action of **Electricity** on the sympathetic in six cases of simple glaucoma. The method employed is to apply the negative electrode (one about 300 sq. cm. in size) to the nape of the neck. The electrode attached to the positive pole is about 8 or 10 cm. long and 2 or 3 cm. wide. This must be very carefully protected by the ordinary coverings and an additional layer of cotton wool, and applied, after being soaked in hot water, to the anterior border of the sterno-mastoid in its whole length. It is secured in place by a bandage. The current used is one of 20 milliampères, the electro-motive force of 20 volts, and is allowed to pass for fifteen minutes. The treatment is used once in three days. In the cases referred to very material benefit resulted, and the author strongly recommends the trial of this method before any operation, including iridectomy, is resorted to.

REFERENCES.—[1]*Brit. Med. Jour.*, Oct. 6, 1900 ; [2]*Ann. d'Oculist.*, June, 1900 ; [3]*Brit. Med. Jour.*, Feb. 2, 1901 ; [4]*New York Med. Jour.*, June 9, 1900 ; [5]*Treatment*, Nov., 1900.

GOITRE. See also "Exophthalmic Goitre"). *R. Hutchison, M.D.*

Murray[1] says that the simple parenchymatous goitre of adolescents is specially favourable for treatment by **Thyroid Extract,** but the enlargement of the thyroid is apt to reappear after cessation of the drug. In cystic œdematous cases it is of little use. Treatment should be continued for two months, 2 grains of the powder being given three times a day, and the dose pushed until slight symptoms of thyroidism appear. If after the lapse of this time the goitre has been decreased in size, it should be continued for another four or six months to obtain a maximum effect. If there is no diminution by the end of two months further treatment is useless. The effect may be supplemented by the inunction of red iodide of mercury ointment, and iron should be given if there is anæmia.

REFERENCE.—[1]*Pract.*, April, 1901.

GONORRHŒA. *J. W. Thomson Walker, M.B. Ed., F.R.C.S.E.*

Generalised Infections by the Gonococcus.—Ward[1] considers that the gonococcus in its process of growth in the body produces an irritating toxin, which is the direct cause of all symptoms, both local and general. In every case the toxin is absorbed into the system, where it causes systemic degenerations of varying degrees of severity. Gonorrhœa is thus a general toxæmic affection, but the microbes which form the toxin are generally localised in or around a mucous tract. The infection may spread by continuity to the ducts and organs which communicate with the tract affected, or it may penetrate to the interior of the body, either by direct extension or by a process of growth through the mucous membrane affected. Thence the invasion reaches the cellular tissues, the lymphatics and lymph glands, and the vascular system. This invasion is rendered possible by the paralysing effect of the toxin absorbed upon the leucocytes, which in susceptible individuals hinders the process of phagocytosis. Having reached the circulation, the microbes are conveyed to the heart or to terminal capillary circulations in serous or synovial membranes, or to the slender vessels in tendinous and fibrous structures. In these situations they become stranded, and develop, forming more toxin which sets up local inflammation.

The invasion of the organism is favoured by all too energetic measures directed against the local infection, since these depress the local powers of resistance, and, by abrading or lacerating the mucous surface, may directly open doors to the invaders.

TREATMENT.—A silver compound, slightly different from the organic combinations (mercurol, dermatol) commented upon in the

last issue of the *Medical Annual*, has lately come into use under the name of **Ichthargan.**

This is a combination of ichthyol and silver, the metal being present in the proportion of 30 per cent. It is said, and no doubt with some truth, that the nitric acid used in the preparation of nitrate of silver is the cause of the irritation following the use of this preparation. To obviate this and at the same time intensify the bactericidal action, ichthyol-sulphonic acid takes the place of the nitric acid.

Ichthyol, although distilled from bituminous quartz, has some claim to be considered as an organic body, from the remains of fish and animals found in the strata from which it is prepared. This new combination may therefore be included among the organic compounds of silver.

So far back as 1897 ichthyol was used as a gonococcocide in weak solutions after the irrigation method of Janet. Jadassohn[2] had reported upon its antagonistic action to the multiplication of gonococci in mucous membranes, and Canova, of Paris, found it suitable for irrigation. Werner[3] followed with an encouraging report on eighty-two cases of gonorrhœa, in which the best results were obtained when the anterior urethra alone was affected. Ichthyol has not, however, come into very general use in acute gonorrhœa.

Reports upon this new combination of the substance with silver are not as yet very numerous, and the drug is still upon its trial. Leistikow[4] speaks favourably of the compound. He uses a watery solution ·02 to ·2 per cent. as a frequently repeated injection in acute gonorrhœa of the anterior urethra. He claims that it speedily kills the gonococcus, and changes the purulent into a serous discharge, and in some cases it almost aborts the disease. This agrees with the laboratory report of Dr. Aufrecht, of Berlin.

The drug is a brownish powder, readily soluble in warm or cold distilled water or in glycerin, and the peculiar properties claimed for it are the absence of irritation and an increased power of penetration.

Colonel Hamilton, of the Indian Medical Staff, recommends the injection of a 4 per cent. solution of **Cocaine** followed by **Silver Nitrate** (4 grains to the ounce) in acute gonorrhœa. The treatment was painless, and in three or four days the discharge had entirely ceased.

Casper[6] disapproves of any attempt at abortive treatment of acute gonorrhœa by strong injections, Janet's irrigations, etc. When there is violent inflammation from the first, a solution of **Thallin** (1 per cent.) is used as an injection. In slight inflammations nitrate of silver (1 in 10,000 to 1 in 4,000) or permanganate of potass are recommended. From an experience of seventeen cases of blennor-

rhagia in women and one case in a man treated with **Picric Acid,** Dr. Duque recommends the following technique[7]: A solution of picric acid (·5, 1 or 2 per cent.) in distilled water is used. The patient urinates to wash away any discharge, and the external genitalia are then washed with a weak carbolic lotion. The catheter of a Guyon's syringe is passed up to the neck of the bladder, and six drops of the picric acid solution are then ejected and a drop instilled at short intervals as the catheter is slowly withdrawn. The treatment was employed once daily, the mean period being from six to twelve days. Pain lasted only a few minutes, and was less than after injections of silver nitrate, protargol, or perchloride of mercury.

REFERENCES.—[1]*New York Med. Jour.*, Oct. 27, 1900; [2]*Lancet*, i, 1897, p. 1,165; [3]*Monats. f. Prakt. Derm.*, Aug., 1897; [4]*Cent. f. Chir.*, Oct. 27, 1900; [5]*Ind. Med. Gaz.*, Sept., 1900; [6]*Med. Rec.*, Aug. 4, 1900; [7]*El progreso Medico*, May, 1900.

GOUT. *R. Hutchison, M.D.*

ETIOLOGY.—The following are abstracts of the views expressed by some leading authorities regarding the etiology of gout, at the thirteenth International Congress of Medicine.[1]

P. Le Gendre rapidly reviewed the principal theories, namely, the introduction in excess of uric acid by the food, or of nitrogenous substances generating uric acid; the formation in excess of uric acid by destruction of the nucleins or nucleo-albumins proceeding from the leucocytes or from the nuclei of all the cells in the body; the accumulation of uric acid by insufficiency of transformation into urea, whether through torpidity of the liver or default of a ferment permitting it to fulfil its uropoietic function, or by inadequate oxidisation throughout the organism; the retention of uric acid in the blood by insufficiency of the eliminatory function of the kidney; the resorption of uric acid in the kidney, which being supposed normally to have the function of effecting by certain of its cells the formation of uric acid by combination of the urea and glycocol proceeding from the liver, would become incapable of eliminating the acid formed. This being reabsorbed would in the blood become quadriurate of soda, which being present in superabundance, precipitates itself under certain influences in the tissues in the state of biurate of soda. Some held that the presence of urate of soda in the articular tissues sets up therein only a paroxystic inflammatory reaction as a foreign body; others that the uric acid acts as a chemical poison, causing necrosis, and that the preliminary mortification of the tissues is necessary to the formation of the crystallised uratic deposits. Some explained

the gouty localisations by the smaller vascularisation or the less resistance of predisposed tissues, and the onset of attacks by the hindrance of the renal functions ; others attributed the localisations, paroxysms, and metastases to a nervous influence. It had also been believed that uric acid was hurtful only after having undergone certain physical or chemical modifications, and that a pathogenic *rôle* should be attributed equally to substances other than uric acid, such as alloxuric bodies. Each of these theories was open to valid objections, and the most plausible could explain only the mechanism of the gouty paroxysm, not the permanent and hereditarily transmissible disturbance, the link between the disease of the father and that of the son. Clinical statistics, however, had placed it beyond question that gout is observed with special frequency in individuals whose ancestors or descendants suffer from diseases of the so-called arthritic group or from trophic inadequacy, *e.g.*, diabetes and obesity, and that gout is often associated with some of these diseases in the same person. The relations established between diseases of the arthritic group warrant us in attributing to each of them the pathogenic process shown to be true as regards one of them by Bouchard, after whose investigations it is no longer permissible to doubt that diabetes consists in a diminution of the aptitude of the tissues to burn up sugar, to carry to the extreme the transformations of carbohydrates. If, clinically, gout is of the same nature, it is probable that there exists in the gouty subject a defective elaboration of nitrogenous material, an inaptitude of the tissues to destroy albumin thoroughly. Among the consequences of the incomplete destruction of refuse, must be included the incumbrance of the organism, both by certain acids (oxalic, acetic, lactic, etc.), which can diminish the solubility of uric acid without that substance being necessarily in excess in the blood, and by certain organic bodies the toxicity of which may contribute to the production of the manifold accidents of gout. Clinical statistics further place in evidence the morbid affinities of gout with simple albuminuria and interstitial nephritis. It may be inferred from these coexistencies that the functional disturbances of the kidney, as those of the nervous system, play a part in the preparation of gout and in the outbreak of its paroxysms, either by hindering the elimination of toxic waste products of the denutrition of the tissues, or through neurotrophic inhibition of the intracellular metabolism. When gout is acquired, the nutritive disturbance of the cells is brought about by a defective hygiene (abuse of food stuffs nitrogenous or rich in oxalic acid, and of certain fermented drinks, insufficient physical activity, and overstrain of

the nervous system), or by the action of a poison (lead). When gout is hereditary, it is that the nutritive disorder of the cells of the first begetter has been continued through the ovum or the spermatozoon in the descendants of these cells.

Sir Dyce Duckworth considered that a paroxysm of gout, the sites of its occurrence, and its metastases, are determined by nervous influences, probably dominated from the bulbar centre, and that the local attacks alight either in the joints or in textures which have been weakened or rendered vulnerable by impaired nutrition, owing to past injury or overuse. This central neurosis was an essential and transmissible feature in the pathogeny of gout, and pertains to the arthritic diathesis generally. The urichæmia of gout is peculiar, and unlike that which is induced by other morbid conditions, but the occurrence of urichæmia in the gouty is by itself inadequate to induce attacks of gout. Uratic deposits in any part of the body may be removed in course of time, but are apt to be permanent in the least vascular tissues. They may occur to an enormous extent in gouty persons without the occurrence of any pain or paroxysms. The clinical features of gout indicate that both hæmic changes (due to inherent morbid tissue metabolism) and a neurotrophic disturbance act as pathogenic factors, and that, consequently, gout is to be regarded as a neuro-humoral malady.

Ebstein considers, amongst other conclusions, that to understand the pathogeny of the different symptoms of gout, one must assume (*a*,) A primary articular gout; (*b*,) A primary renal gout. The former is the most widespread form of gout, which does not prevent its subjects from reaching an advanced age. Primary articular gout develops itself first under the influence of a retention of uric acid; this retention is localised because it affects only one or more parts of the human body. In primary renal gout we have to do from the first with a generalised retention of uric acid, which consequently affects all parts of the body; it is always caused by a primary and material change in the kidneys.

Critzman,[2] after discussing the various theories of the etiology of gout and all the evidence for them, concludes as follows :—Uric acid is not a normal constituent of the blood, but just before or during an attack of gout it is to be found constantly. At the same time the amount excreted by the kidneys is just as constantly diminished. This never occurs with healthy kidneys, which are capable of excreting several times the normal quantity of uric acid, and it therefore follows that the renal tissue must be diseased. The realisation that the so-called gouty kidney is the primary cause of gout, and is not

secondary to it, gives the key to the right understanding of the whole disease. Take the case of gout in chronic lead poisoning. Luthje and Weintraud have shown that the administration of salts of lead to animals in no way lessens the amount of uric acid excreted by the kidney. This proves that lead alone cannot produce retention of uric acid and uricæmia, and that it does not become pathogenic until it has deranged the kidneys. But this once done, uric acid is deficiently excreted, is absorbed into the blood, and saturnine gout is established. Exactly the same is true of hereditary non-saturnine gout, though here alcohol is the poison which most often causes the necessary lesions in the kidneys. Infectious diseases also damage the kidneys in persons predisposed to gout, more than in others. Accepting the view, as the writer does, that uric acid is formed in the kidneys, chiefly or solely from the decomposition of the nucleins present in the body, it is evident that, given nephritis and consequent retention of uric acid, a diet rich in absorbable nucleins, or the onset of any disease accompanied by leucocytosis, will produce a precipitation of uric acid in the tissues, already weakened in their nutrition by the presence of blood containing toxic substances. The tubuli contorti may be affected for years before nephritis is clinically evident, and in such a case the existence of gout is sufficient evidence of nephritis, though it may be in a very early stage. Just as there can be no gout without uric acid, with uric acid there can be no gout without chronic nephritis. What has been said about the origin of uric acid explains the contradictory results obtained by different observers with different diets; the important point being, not whether it is animal or vegetable, but the amount of nucleins contained in it.

Haig[3] summarises his latest views on this subject as follows:—

(1,) That gout is due to poisoning by flesh and tea and similar substances, which introduce uric acid into the body in very considerable quantities.

(2,) That the uric acid so introduced may not only remain in the body, but may prevent the excretion of the uric acid formed in the body.

(3,) That as a result the body becomes more or less saturated with uric acid, which may irritate its fibrous tissues (gout or rheumatism), or may obstruct its capillaries, causing high blood pressure and defective capillary circulation and their results, such as the great group of circulation diseases, the uric-acid headache, epilepsy and mental disease, anæmia, Bright's disease, Raynaud's disease, etc., all of them being mere results of the enormous influence which uric

acid asserts on the circulation of the body by obstructing its capillaries.

(4,) That all these diseases, called by so many names, fall into two groups : (*a*,) The local group, and (*b*,) The circulation group ; of which the latter is by far the more extensive and important, so that what we used to call gout and rheumatism become almost insignificant by comparison. In the future they should be called uric-acid poisoning, and recognized as due to unnatural food.

Tannicliffe and Rosenheim[4] have subjected the salts of uric acid to fresh chemical examination, and as the result have discarded Robert's hypothetical quadriurates as a factor in the production of gout and uric acid diseases. The following are their conclusions :—

(1,) There is no evidence of the existence of a third order of uric acid salts—*i.e.*, quadriurates—either in the artificial or natural amorphous urinary deposits, or in the fluids of the body.

(2,) The substances obtained artificially under the conditions supposed to produce quadriurates, consist of mixtures in varying proportions of uric acid and biurates, or of pure uric acid or pure biurates alone.

(3,) Natural amorphous urinary deposits consist of a mixture of uric acid with urates of sodium, ammonium, potassium, calcium, and magnesium (containing in most cases in addition phosphoric acid).

(4,) The property of some amorphous urates, of showing the formation of uric acid crystals under the influence of water, is due to the dissolving out of the more soluble biurate moiety and a change in physical state of the remaining uric acid.

(5,) Any theory concerning the pathology or treatment of gout, or the uric acid diathesis, built upon the assumption of the existence of quadriurates, requires reconsideration.

(6,) The existence of two forms of uric acid (the tautomeric lactam and lactim form), may explain the variation in physical and physiological behaviour of this acid and its salts.

Treatment of Chronic Gout.—The following summary[5] may be useful :—

Exercise out of doors is of undoubted value in chronic gout, and during inclement weather indoor exercise is not to be despised. Levison's assertion that uric acid excretion is increased by exercise requires modification. When a man of sedentary habits takes exercise, the excretion of uric acid is increased for the first day or two, but if the exercise be continued daily the increase is not maintained. Regulated exercise is an agent of considerable power in preventing various manifestations of gout.

Sodium Salicylate.—If the retention theory be accepted, our object should be to diminish the production of uric acid in order to relieve the kidneys. It seems inconsistent for supporters of this theory to advocate the use of sodium salicylate, a drug which undoubtedly increases the excretion of uric acid. Though the increase may be beneficial, it may not. It is true that sodium salicylate relieves the joint pains in gout—how we do not know—but as it increases the formation of uric acid, we ought to consider whether its advantages outweigh its disadvantages before recommending it. **Colchicum** does not seem to have an invariable effect on the excretion of uric acid, yet few doubt its beneficial action in acute gout, and it is also useful in some cases of chronic gout.

The Harrogate Old Sulphur Spring diminishes the excretion of uric acid, and this diminution is not due to retention, as evidenced by the increase in the leucocytes and the gradual rise to the original level after cessation of the waters. When given in conjunction with the massage douche, gouty patients experience considerable relief from their troubles, but the sulphur water, without baths or other adjuvants, also has marked beneficial influence, though the individual must be considered just as much as the ailment.

[The Bath mineral waters increase the excretion of uric acid.—EDITOR[.

Potassium Iodide is a drug of peculiar value in chronic gout. It appears to retard the development of cardio-vascular and renal changes. In cases associated with albuminuria there is a diminution in the amount of albumen during its administration, and it is useful in reducing the inflammatory thickening around enlarged joints. It should be given cautiously, as some patients are very susceptible to it, and it is contra-indicated in advanced renal cases.

Quinine is said to diminish the excretion of uric acid, but experimental investigation showed a slight increase. It is, however, an exceedingly useful tonic.

Guaiacum.—It is not an uncommon experience to meet with patients who periodically take guaiacum on their own account, with the happiest results. As an eliminator of uric acid there is probably no drug to equal it. Guaiac resin should be taken in compressed form, in doses of 20 grains twice a day for about a fortnight. After an interval it may be repeated if necessary. It is not advisable to continue its administration uninterruptedly.

Alkalies and Solvents.—A good deal of misconception has existed concerning the part played by alkalies in the treatment of gout. That they are of considerable value in the gastric and hepatic com-

plications of gout must be admitted, but that they have any particular influence on the gouty diathesis, or that they increase the excretion of uric acid or the solvency of biurate, must be denied. It was believed for some time that the alkalinity of the blood was markedly diminished in gout, and alkalies were given in order to correct this, but we now know that the alkalinity of the blood is either normal or slightly increased. Hence the treatment of gout by alkalies is practically restricted to disorders of the alimentary tract. It is possible that uric acid may enter into combination with some other constituent of the blood than the alkaline salts. One of the most characteristic properties possessed by the blood is its uniformity of composition, and in no particular is this more marked than in the maintenance of its normal alkalinity. If a large quantity of alkali is given to animals, it is quickly excreted by the kidneys. Until it has been demonstrated that alkalinity can be increased by medicinal doses of alkaline salts, it would be safer, so far as particular salts are concerned, to be guided by clinical experience.

Of biurate solvents there is none superior to pure water; therefore, gouty patients should take a moderately large quantity of water between meals. Dr. Tunnicliffe found from laboratory experiments that tartrate of piperidine had a marked solvent effect on sodium biurate, but it has hardly been shown clinically to exhibit this effect. In ascertaining the efficacy of a supposed biurate solvent it should be given both to a healthy and to a gouty individual, while on a fixed diet. If it has no effect on the uric acid in the healthy, but increases the excretion of uric acid in the other case, we are justified in assuming that the drug either eliminates the excess of urates in the blood, or increases the solvency of biurate, and consequently effects its elimination.

REFERENCES.—[1]*Brit. Med. Jour. Epit.*, Aug. 11, 1900; [2]*Ibid.*, March 11, 1899; [3]*Med. Rec.*, Jan. 26, 1901; [4]*Lancet*, June 16, 1900; [5]*Brit. Med. Jour.*, June 9, 1900.

GRAVES' DISEASE. (See "Metabolism.")

HÆMATURIA. *Prof. Robert Saundby, M.D., LL.D., F.R.C.P.*

It is well known that the action of hæmostatic remedies upon renal hæmaturia is most uncertain. It is therefore interesting to record the results obtained by Schwabe[1] in a case of recurrent nephritis with severe hæmaturia, treated by the subcutaneous and oral administration of **Gelatin** as used by Carnot and Lancereaux for aneurysm. He injected 25 c.c. of 2 per cent. solution of pure gelatine in physiological saline solution beneath each clavicle, and

repeated the injection on the following day ; half a litre of the 10 per cent. gelatin solution was then administered daily by the mouth for a week. This line of treatment was completely and permanently successful, after all other measures had failed. The pain caused by the injections is said to have been quite bearable, and there were no alarming after effects of any kind.

REFERENCE.—[1] *Therap. Monats.*, June, 1900.

HÆMOPHILIA. *R. Hutchison, M.D.*

C. Royds Jones[1] reports a case of hæmophilia in a girl eight years of age, who had had from infancy very extensive hæmorrhages every two or three weeks, from the mucous membranes of the digestive tract. Iron, cod-liver oil, sulphuric acid, calcium, and arsenic, all failed to have any effect. **Liquor Thyroidii** was here given in 4 minim doses, three times a day, and was continued for six weeks. After the commencement of this treatment the bleeding ceased, and the child looked far stronger and healthier than she had ever done before.

REFERENCE.—[1] *Brit. Med. Jour.*, Nov. 10, 1900.

HÆMORRHAGE (Arterial from the Ear).

Priestley Leech, M.D., F.R.C.S.

W. G. Spencer[1] read a paper on the control of arterial hæmorrhage from the ear by **Ligature** of the common carotid. The cases to which he drew attention were those of severe recurring and ultimately fatal arterial hæmorrhage from the ear in cases of suppurating otitis media. *Post mortem* these cases were shown to be due to ulceration into the internal carotid artery at, or close to, its curve in the petrous bone. They were not favourable cases for surgical interference, and they might be divided into three groups : (1,) Cases entirely unfavourable on account of being secondary to pulmonary tuberculosis ; the hæmorrhage might be stopped, but death ensued sooner or later from the pulmonary disease. (2,) Cases of chronic ear disease, which by modern methods were preventable by a timely operation on the middle ear and antrum. (3,) Recent cases arising after acute inflammation in children, the hæmorrhage being successfully controlled by ligature of the common carotid. The hæmorrhage in this group probably came from the carotico-tympanic twig, close to its origin from the internal carotid artery. Ligature of the common carotid was advisable in the first and second groups as a palliative measure, but cases in the third group were the most favourable for operation.

REFERENCE.—[1] *Lancet*, p. 1205, vol. i, 1901.

HÆMORRHAGE (Post-Partum).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

PREVENTION.—In the majority of cases post-partum hæmorrhage is due to uterine inertia, and this is the result of exhaustion, either of the uterus or of the patient. In a smaller number of cases the hæmorrhage is due to retention of part or the whole of the placenta or membranes. Exceptionally it is caused by lacerations of the genital tract. These are all the causes that need practically concern the practitioner. In books a time-honoured custom demands the inclusion of hæmophilia for the sake of symmetry and completeness; it would be interesting to hear of some cases where such hæmorrhage was really due to hæmophilia.

Considering the chief cause of post-partum hæmorrhage, it is clear, as Davis[1] very properly insists, that prevention lies principally in the prevention of exhaustion; and this is done by insisting on a sufficient amount of nourishment being taken; by securing to the patient a measure of rest and sleep by means of drugs, such as **Chloral Hydrate**, in 10-grain doses three-hourly, or in a larger dose per rectum; **Bromide of Ammonium**, in 20-grain doses, or **Trional** in 10-grain doses, given in broth, soup, or with a tablespoonful of whisky in hot water; and by not allowing labour to drag on too long without assistance.

Hæmorrhage from the second cause, retention of the placenta, may generally be prevented by careful management of the third stage of labour. In this connection Byers[2] calls special attention to the important principle, never to deliver in the absence of pains. A great mistake is an attempt made at once by the obstetrician to express the placenta from the upper and contractile part of the uterus (rendering imminent retention of membranes, post-partum hæmorrhage, and even septic poisoning), instead of waiting until certain signs indicate that Nature herself has effected it.

When the occurrence of hæmorrhage after delivery is expected, the patient should be advised to take exercise, and to keep her skin acting by baths, and the bowels by purgatives. Stimulants should be prohibited, and, if there is albuminuria, a milk diet should be enforced. The fœtus should be delivered slowly, and it is advisable to puncture the membranes when the os is nearly fully dilated. Ten grains of **Chloride of Calcium**, taken thrice daily for a couple of weeks before delivery, is good practice.

TREATMENT.—The various measures to be adopted, in their order, are thus summed up by Byers: *When hæmorrhage does set in*, the first measure to be adopted is external uterine **Massage**. When this

fails, hot water (118° F.), with a little **Creolin**, or **Salt** (a teaspoonful to the pint), should be used in large quantities, and the whole inner surface of the cavity should be bathed. The hand should not be inserted into the uterine cavity unless to separate and withdraw the placenta, if, owing to adhesions, external abdominal massage fails to expel it. After the hand has been withdrawn, the uterus should be carefully douched with a hot creolin lotion. Should all the preceding measures fail, bimanual compression may be tried. The author prefers, however, **Gauze Plugging** of the uterus. Then we have the drawing down of the uterus as far as possible with tenaculum forceps; eversion of the uterus into the vagina so that the bleeding vessels may be caught; or an indiarubber ring (Kock's) or a gauze bandage may be fastened around the everted uterus. When the bleeding is stopped the uterus is reinverted. The author does not approve of the injection of perchloride of iron.

Bishop[3] gives an extremely graphic picture of a hypothetical case in which a practitioner has to face this grave complication, and in which, in spite of every assistance and of the correct adoption of all the measures usually recommended, the patient nevertheless slips through his hands. He contends that teaching on this subject is too much confined to traditional methods having two primary objects, *viz.*, first, to obtain contraction of the uterus, and secondly, in our last effort, to obtain local coagulation of the blood in addition. After giving extracts from several leading text-books on obstetrics, and enumerating the different plans of treatment, he remarks: "I wish you especially to note the frequent repetition of the word *fail*—'if these measures fail, try,' etc. Dakin apparently feels so sure that the earlier measures *will* fail, that he says 'the various manœuvres must succeed one another rapidly, and the preparations necessary for those to follow must be made while any one method is being employed.' Am I not justified in saying that the whole tone of their advice is tentative, suggestive of mere experiment? One seems to hear them say, 'Try this, that, and the other, but understand that neither I nor anyone else can answer for their efficiency, and don't blame *me* if your patient dies.' But ask yourselves, 'Of what did this patient die?' Did she die of an uncontracted uterus? Is there such a cause of death at all? No; she died of hæmorrhage. She bled to death just as much as if her carotid and jugular veins had been cut, and you had no effective means of stopping the flow of blood from them. Now all writers on this subject subconsciously assume or directly assert that the *only* effective way possible to check hæmorrhage in this situation is by obtaining contraction of the

uterus, or, failing that, by producing firm clots in the open mouths of the vessels concerned. But is that true? Have we no other means? and how *if the uterus cannot contract?* How if we are striving after an end which is unattainable from the first, and from the very essential conditions of the thing becomes more and more impossible with every ounce of blood lost? May not the reason of the whole lamentable business lie here? Writers talk of atony of the uterus, inertia of the uterus, as if the uterus were a sulky child, able to do what we ask of it if it only would, and only to be coerced by strong measures into doing it: and when we fail, as I will try to show you we are bound *ab initio* to fail, there is a feeling such as a parent has with a naughty child whose obstinacy has withstood a sound whipping, and who still sulkily persists in refusing to do what we wish. Books call it stimulating the uterus to contract. In plain English, it is mere whipping, mechanical, by kneading, flicking with wet towels, forcible compression between one hand inside and one out, between both hands outside, between the hand outside and packing within; or chemical, by ergot and strychnine; it is all, when reduced to simple terms, mere whipping."

He then strenuously urges that the proper treatment is to control the hæmorrhage by surgical means while the uterus gains time to recuperate, which may be a matter of not more than ten minutes. To this end he advises abdominal **Compression of the Aorta;** traction on the cervix with a volsella from below, so as to kink the uterine arteries; and raising the foot of the bed so as to empty the pelvis of blood as far as possible. He holds that blocks under the foot of the bed are insufficient; the bed must be raised so as to place the patient almost in the Trendelenberg position, and this may be effected by placing the feet of the bed on a table. Hayd[4] also approves of compression of the aorta. On the other hand, Leslie Jones,[5] in the discussion on Bishop's paper, strongly condemned it, saying that compression of the aorta as a means of controlling hæmorrhage was very old, and had deservedly been abandoned. Under the circumstances in which it might be considered desirable it was useless, and entailed loss of time when every moment was of importance. The danger, too, of compressing the vena cava should not be so lightly set aside; if the aorta were effectually compressed under the circumstances which must necessarily obtain, it would be next to impossible to avoid compressing the cava at the same time; the danger of doing so it was superfluous to dwell on. He strongly advocated the following method, which he had for nearly thirty years adopted: A full dose of **Opium** having been given—nowadays it will be morphine

subcutaneously—the left hand was introduced into the uterus, and the fist closed; then the right hand from without seized the closed fist in the womb, and in doing so must necessarily take in its grasp the uterine wall in its full extent, behind as well as above and in front, and this no matter how relaxed and eluding the uterus might be. Then the right hand pressed the closed fist, and with it the uterus, downwards into the pelvis, when hæmorrhage, if there still was any, immediately ceased. The uterus soon began to contract, and endeavoured to expel the fist, which, far from being withdrawn, was tightly pushed upwards against the force applied by the right hand, and was removed only when it had been compulsorily expelled. Then was the time for **Ergot** and such external stimulating agencies as ice-cold applied to the cervix or fundus; but the chief thing was to keep the uterus, now firmly contracted, grasped in both hands and pressed into the pelvic cavity. At the same time that this was being done, someone raised the pelvis on three or four pillows, and in cases where the hæmorrhage had been extreme and exhaustion alarming, injected a large quantity of salted water into the bowel. **Strychnine** was also most useful.

Platon[6] recommends the injection into the uterus of **Oxygenated Water,** which he has used successfully when ergot and ergotin, hot injections, and tampons with the perchloride of iron had failed.

After-treatment.—According to Byers (*op. cit.*), when hæmorrhage has ceased, the subsequent anæmia demands the most careful treatment. Subcutaneous injections of **Ether** and **Strychnine** are useful, but our sheet anchor is **Saline Transfusion.** Half a pint at 98° F. should be injected into the tissues under each breast. This should be continued until the pulse gets slower and increases in volume. Concentrated meat juices, milk, etc., should be given, and the patient should be encouraged to take nourishment.

REFERENCES.—[1]*Med. Rec.*, Jan. 13, 1900; [2]*Brit. Med. Jour.*, Sept. 15, 1900; [3]*Lancet*, April 13, 1901; [4]*Jour. Amer. Med. Assoc.*, June 30, 1900; [5]*Brit. Med. Jour.*, April 6, 1901; [6]*Med. Rec.*, Feb. 17, 1900.

R. Hutchison, M.D.

Schäfer,[1] as the result of numerous experiments, suggests that a trial should be made of the extract of **Suprarenal Medulla** in all cases in which it is desired to strengthen or to induce uterine contraction. The observations hitherto made show that this extract has a far greater power in causing contraction of the muscular tissue of the uterus, whether pregnant or non-pregnant, than any other drug having the same reputed action, and this whether the extract be applied

directly to the muscular tissue or be introduced into the circulation. Since the active principle is unaffected by the gastric juice, it can be given by the mouth, but in *post-partum* cases it would doubtless be more advantageous to inject it directly into the uterine cavity, where it would not only tend to produce immediate contraction of the uterine musculature, but also of the uterine arterioles, and thus more effectually control accompanying hæmorrhage. The solution he recommends is an infusion of dry medullary substance, 30 grs. to the pint of water. This should be sterilised by boiling and injected whilst still fairly hot. Such a solution is a powerful styptic, and its value in this respect may be still further increased by the addition of 60 grs. of calcium chloride.

REFERENCE.—[1]*Brit. Med. Jour.*, April 27, 1901.

HÆMORRHOIDS. *Herbert W. Allingham, F.R.C.S.*

Pennington[1] describes a single operation which he has found more satisfactory than others in a series of fifty cases. In his description he says: "Each anal quadrant is grasped at the muco-cutaneous junction with a pair of T-forceps which are held by an assistant. With these the anus is everted and the tumours are exposed. Seizing the forceps attached to the posterior quadrant, the operator everts it, and with scissors curved on the flat cuts off the redundant tissue only, which is usually about one-third or one-half of the uppermost part of the hæmorrhoidal node. The blood of the tumour is thus permitted to escape." The operation appears to give great risk of hæmorrhage and no special advantage.

A new remedy for this complaint is recommended by Hall.[2] He has an injection given after each action of the bowels consisting of :—

℞ Ext. Echinacea angust. fl. ℥j | Aq. Destill. ℥j
Ext. Hamamelidis Virg. fl. ℥ij |

A slight burning sensation is caused that soon passes away.

Sir James Sawyer[3] gives a formula for an ointment for piles, the main constituent of which is the **Celandine** plant (Ranunculus ficaria). E. Older[4] describes the treatment of piles by position.

REFERENCES.—[1]*Inter. Jour. Surg.*, Dec., 1900; [2]*Cincin. Lancet Clin.*, March 23, 1901; [3]*Birm. Med. Rev.*, May, 1900; [4]*Zeits. f. Diat. u. Physik. Therap.*, No. 8, 1901.

HÆMOTHORAX. *Priestley Leech, M.D., F.R.C.S.*

Luffler and Milian[1] give their conclusions as to the treatment of this condition, from a study of a case caused by a pistol shot wound of the left side. They say blood effused into the pleural cavity does not coagulate while in this cavity. The increase of fluid effusion,

which in many cases occurs after an interval of several days from the date of injury, is held to be due not to further bleeding, but to an exudation of serous fluid, and need not indicate any operative interference. Fever, if not high, does not indicate operation, as it is not due to microbes, but to absorption of fluid from the pleural sac. The continued presence of polynucleated cells in the effusion after the twenty-fifth day, should lead to a suspicion of suppuration. They conclude that the rational treatment of traumatic hæmothorax should consist in **Capillary Puncture** about the fifteenth day, when the effused fluid has been diluted by serous fluid, and when the wound of the lung has so far healed that any risk of hæmorrhage after expansion of the lung is unlikely.

REFERENCE.—[1] *Rev. de Chir.*, April, 1901.

HALLUX VALGUS. *Priestley Leech, M.D., F.R.C.S.*

Loison [1] from the skiagraphic examination of two cases, says the angular deformity is due not so much to outward inclination of the phalanx, as to inward inclination of the metatarsal bone, the width of the anterior portion of the interspace between the first and second metatarsal bones being increased. The projection on the inner surface of the metatarso-phalangeal joint is caused in his opinion by the abnormal abduction of the head of the bone, and not by the presence of an exostosis. Removal of the head is not always a satisfactory operation. Total resection of the joint will not, he says, overcome the deformity caused by the inward inclination of the metatarsal bone, and results in ankylosis; and tenotomy of the extensors of the great toe may result in failure of union and in suppression of the function of these muscles. Loison recommends a cuneiform resection of the metatarsal bone near its base, but in front of the insertion of the tendon of the peroneus muscle.

REFERENCE.—[1] *Buli. et Méd. Soc. Chir. de Paris*, No. 17, 1901.

HAY FEVER. *Prof. H. P. Loomis, M.D., New York.*

L. G. Somers, of Philadelphia, reports on a new method of treating hay fever by the use of **Supra-renal Extract**. His experience with this remedy comprised twenty-one patients, nineteen of whom were males, and two females. The youngest patient was seventeen years of age, and the oldest fifty-six years. The time during which the patients received the drug varied from one to six weeks, ten patients being obliged to discontinue the tablets after a week's trial on account of disagreeable symptoms. The drug was used in tablet form, as this did not produce the nausea which the glycerine extract of the gland caused. The dosage was one 5-grain tablet every

two hours, except in a few cases where a tablet was given every four hours. The results were as follows: The sneezing attacks were diminished in frequency, and the nasal stenosis was favourably influenced, in about one half of the cases a marked diminution in size being observed in the engorged turbinate mucous membranes. It is thus to be used in conjunction with other measures for the treatment of hay fever, though it is "the most satisfactory single remedy that we at present possess" for treating the local troubles referred to.

Solis Cohen, himself a sufferer, found that the symptoms could be controlled by using a 5-grain tablet of supra-renal extract, which was allowed to slowly dissolve in the mouth, every two, three, or four hours. He found the associated coryza and sneezing would cease within fifteen minutes after taking the tablet. Similar reports have been made by Douglas and Bates.

Douglas says that the administration of the drug may be either internally through the stomach, or locally through the nasal tissue; or, better, internal may be combined with local treatment. The drug is used locally either by means of a spray, or upon pledgets of cotton saturated with solutions. A solution of 6 to 12 per cent. is made by shaking up the saccharated dried extract of the supra-renal gland with water, allowing it to stand for an hour or two, removing the clear solution from the top, and discarding the precipitate. This solution may be used in the nose by means of a spray as often as every two hours, until the symptoms are controlled, and reapplied whenever symptoms of obstruction, coryza, and sneezing return. Internally a 5-grain tablet is administered at first every two hours, day and night, until some giddiness or palpitation is observed, or until the local examination of the nasal membrane shows that the remedy is controlling the vaso-motor paralysis. After this has been accomplished the same dose may be given at longer periods—every three hours, then every six hours, and then twice daily—and the administration of two tablets a day is continued throughout the hay-fever season. If disagreeable symptoms reappear because the dose is too rapidly diminished, the quantity may again be increased until the symptoms are controlled. Used in this way, in favourable cases, patients will remain in comparative comfort during the entire hay-fever period.

W. Milligan, M.D.

Hollopeter[1] recommends removal of all hypertrophies, polypi, etc., and the subsequent brushing of the mucosa with a saturated solution of boric acid, to which suprarenal extract may be added. Subsequently the parts are sprayed with a solution of camphor, menthol, and palmetto oil.

REFERENCE.—[1] *Inter. Med. Mag.*, June, 1900.

HEART (Diseases of). *Prof. Alfred H. Carter, M.D., F.R.C.P.*

Cardiac Failure.—The causes of cardiac failure have always a great practical importance, since they provide indications for the management of a large proportion of all cardiac cases. Manges[1] in writing on this subject points out that from the practical stand-point cardiac failure is not a clinical entity. Changes in the heart-wall leading to failure of compensation might result: (1,) From failure of the general nutrition of the body; (2,) From disturbance of the local nutrition of the heart; (3,) From increased work of the heart; (4,) From functional cardiac disorders. Gout, rheumatism, and various other constitutional disorders are also potent factors. More rapid in action are such acute infections as acute rheumatism, diphtheria, scarlet fever, typhoid fever, pneumonia, influenza, and sepsis. Chronic arterio-sclerosis is by far the most common of the causes affecting local nutrition of the heart. Hearts with valvular disease and hypertrophy are specially liable to these disturbances of nutrition. The danger to the heart of prolonged and violent physical exercise is now generally recognised. In this connection it might be mentioned that even the muscular effort associated with parturition will often seriously damage a heart already enfeebled by valvulitis. Fright or extreme and prolonged worry must be included among the causes. A final group can be made of those cases in which much mischief is caused by the irrational and unnecessary use of drugs commonly known as cardiac tonics. The popular abuse of coal-tar products and of the thyroid extract come under this head, as do also an unwise use of cures for the reduction of obesity.

Dealing with the same subject from an etiological rather than from a pathological point of view, Prof. Hare[2] says that the various causes of failure come under the following five headings: (1,) Changes due to sudden cardiac stress; (2,) Changes due to valvular lesions producing gradual cardiac stress; (3,) Changes in the blood-vessels producing cardiac stress; (4,) Changes in the blood itself whereby the heart fails; (5,) Changes in the heart muscle of a degenerative character produced by toxic agents and senility. There can be no doubt that changes in the heart muscle frequently follow sudden strain, and they occur oftener than is generally thought. It is also a fact that the valves often suffer damage at the same time, and that the results which follow may be immediate or remote in onset.

Angel Money[3] says that, in heart failure supervening sufficiently slowly, dropsy is generally supposed to appear first in the feet; but he adds that he has many times discovered a large pleural effusion in the right side of the thorax in cases in which œdema of the feet and

legs has either been altogether absent or has been quite insignificant. It may be well to examine this statement further, and endeavour to ascertain its pathology. His supposition is that the rigidity of the thorax and its great capacity, together with the large size and weight of the liver, have to do with the determination of dropsy to the lower half of the right side of the chest. At any rate, he is certain that we ought to pay more attention to this region in many cases of loss of compensation from heart disease. Fluid may exist there when it is least suspected, and he thinks the liver has sometimes been supposed to be larger than it really is. The fluid may be the more readily overlooked because of the absence of physical signs of hydrothorax on the left side.

Mobility of the Heart.—Determan[4] finds that in general the heart moves 2½ cm. to the left and 1 cm. upward when a healthy person lies on the left side, and moves about 1½ cm. to the right and ½ cm. upward when he lies on the right side. In some cases, however, the organ may be displaced 6½ cm. to the left or 4 cm. to the right without causing any distressing symptoms. The greatest change of position of the heart in varying positions of the body occurs in the emaciated, those who lead a sedentary life and whose muscles are flabby. In many persons who cannot lie on one or the other side because of palpitation, pain, and other distressing symptoms, this increased mobility of the heart exists. Occasionally the symptoms are even more severe. The treatment of this condition consists, first of all and chiefly, in improving the general health by means of a **Generous Diet, Arsenic, Iron, Hydrotherapy,** etc.

Dilatation (Acute).—Lees[5] writes an admirably practical paper on this condition, occurring as a sequel of diphtheria, influenza and acute rheumatism, and emphasises its extreme danger as a cause of sudden death in children, especially after diphtheria. He believes it is due to a serious degeneration of the heart muscle brought about directly as the result of toxic causes. He is satisfied that it can generally, if not always, be detected by careful clinical examination. The indications on which he places most reliance are : (1,) Feebleness of the pulse wave ; (2,) Feebleness and diffusion of the cardiac impulse ; (3,) Extension of the cardiac dulness to the left ; (4,) Feebleness of the first sound at the apex, with accentuation of the pulmonary second sound.

These four indications of a weakened left ventricle would all naturally be expected in a heart in which fatty degeneration of its muscle has been produced. They are all present, more or less, in many cases of diphtheria. A fifth sign, which could not have been anticipated,

but which is usually present also, is a marked accentuation of the aortic second sound. This is often very decided, yet the radial pulse is not tense, and one can only imagine that the tension in the aorta is raised by a contraction of the splanchnic arterioles through some central vaso-motor irritation caused by the toxins. If the vascular tension is much increased at the same time that the ventricle is weakened, the danger of fatal syncope is obviously great.

The explanation of the fifth sign advanced by Lees was strongly contested by several correspondents in the *British Medical Journal*, to which the student of the subject may be referred; but the main significance appears to attach to the association of marked accentuation of the aortic second sound with a radial pulse of relatively or absolutely low tension.

Lees also lays great stress on the importance of careful percussion When the extent of the cardiac dulness transversely has been determined by careful light percussion in the fourth right, and the fourth, fifth and sixth left intercostal spaces, the position of the lateral margins of the heart may easily be defined if it be remembered that they both slope upwards and inwards, and the percussed finger be held in a position parallel to this slope in each case. The right margin above the nipple level rapidly approaches the sternum; but when the right auricle is much dilated, its dulness may be detected in the third space as well as in the fourth. The left margin normally rises to the inner side of the nipple, but in a moderately dilated heart the limit of dulness will be found to pass through the nipple, and where the dilatation is great it may cross the vertical nipple line at one, two, or in extreme cases even three, fingerbreadths above the nipple. So long as the left border of the heart only extends one finger's-breadth outside the left nipple there is no serious danger, but anything beyond this is serious, especially as it is then liable to increase very rapidly in a short time.

The cardiac dilatation of diphtheria may occur at an early period of the illness, even after only a few days. But a rapid dilatation, or a rapid increase of an earlier dilatation, may take place even after several weeks. It is therefore necessary to keep a very careful watch on the condition of a child's heart for at least two months after a severe attack of diphtheria.

Aortic Regurgitation; Significance of Pulse-delay in.—Chapman[6] contributes a careful paper to show the bearing of pulse-delay in cases of aortic regurgitation upon the adequacy of compensation. He sums up his work by the following statement: "The chief contribution I have to make to the elucidation of this difficult point is that the pulse-wave produced in cases of aortic regurgitation is slow

This I take to be the main phenomenon in pulse-delay. When delay is observed in these cases, increased arterial tension tends to obliterate the delay. Diminished arterial tension makes it still more manifest. The second point, relating to the slow movements of a hypertrophied heart, is new in this connection also. If, however, we consider that as compensation is attained the arteries are better filled, giving to the patient a corresponding sense of comfort and well-being, and that then the pulse-wave is accelerated, we see that the attainment of a normal heart-radial interval is some measure of the correctness of the compensation, and that this may be a guide to us to avoid further interference."

Relative Intensity of the Second Sound.—Dr. Sarah Creighton[7] has investigated a thousand cases in this connection, and arrives at the following conclusions :—

(1,) Accentuation of the pulmonic second sound is almost invariable in young children, and frequent in youth.

(2,) After the fortieth year of life, the reverse is the case, and it is then rare to find a pulmonic second sound as loud as the corresponding aortic sound.

(3,) Between the ages of twenty and thirty years there is no marked accentuation of either sound.

(4,) In view of the above facts, it is obvious that when one speaks of an accented pulmonic second sound as corroborative of a diagnosis of heart disease, such accentuation must mean an increase in the loudness of the sound over that normally to be expected at the age of the patient in question. A comparison with the aortic second sound is not sufficient to settle the question

(5,) Further, when we speak of an aortic second sound as accented, we must mean (in case of patients over forty years) more accented than it normally is. Once more, the simple comparison with the pulmonic second sound will not settle the question. The comparison must be with an ideal standard carried in the mind.

(6,) In interpreting the meaning of an accentuation of the pulmonic second in suspected mitral stenosis, one must bear in mind the age of the patient. The presence of a pathological accentuation of the sound can be determined only in relation to the degree of accentuation which is to be expected at the age of the patient in question.

Mitral Stenosis.—The physical signs which accompany this lesion and their exact significance continue to exercise the minds of careful clinical observers. Thus Walsham,[8] in view of assertions in some quarters that the murmur of mitral stenosis was really systolic in rhythm, has carefully examined several cases by the X-rays in

conjunction with ordinary methods. He was able to determine that the actual ventricular systole coinciding with the occurrence of the impulse and the first sound, is preceded by a marked projection of the cardiac shadow to the left, which is most obvious at the level of the fourth rib, a movement which is clearly synchronous with and secondary to the auricular systole, and thus pre-systolic in relation to the ventricle. He then found that the murmur of mitral stenosis exactly corresponds with this pre-systolic displacement of the left ventricle. Hence it appears we may still enjoy the comfort of knowing that the old teaching that the murmur of mitral stenosis is pre-systolic in rhythm is correct. It is always risky to assume the truth of the converse of clinical propositions, and this applies to the matter now under consideration; for it is pretty certain that all pre-systolic murmurs are not due to mitral stenosis. Dr. Gibbes[9] points out that the assumption that a pre-systolic murmur is pathognomonic of mitral stenosis has steadily lost ground, since Flint first drew attention to its occurrence in cases of aortic regurgitation where no mitral disease was found on *post mortem* examination. He shows, from a survey of a considerable number of cases, that a pre-systolic murmur may also be present under the following conditions: (1,) Dilatation of the mitral orifice, with normal cusps and chordæ; (2,) A mitral orifice of normal size with roughened margins; (3,) Insufficiency of the aortic valves, with (*a*,) normal mitral orifice and curtains; (*b*,) dilated mitral orifice, but normal cusps and chordæ; and (*c*,) dilated mitral orifice, with thickened cusps and chordæ. He contends that in these cases the pre-systolic murmur consists of muscle tones, which are separated from the sound produced by impact of the segments of the mitral valve, by partial asynchronism of the ventricles, resulting from loss of compensation.

Senile Heart.—Dehio[10] regards retardation of the circulation as the primary factor in all senile changes. This coincides with the appearance of, and is to a certain extent proportional to, the extent of arterio-sclerosis. Owing to the consequent increased peripheral resistance the senile heart does more work than a younger one, but the circulation may be slowed because even a stronger contraction fails to overcome the resistance completely. The senile heart has, therefore, but little reserve force; though it suffices for rest it cannot adapt itself to the requirements of increased exercise. A young and healthy heart can pump when required from four to thirteen times the usual quantity of blood into the aorta. This it attains partly by an increase in frequency and partly by an increase of force of the beats. The beats of the senile heart cannot greatly increase in frequency

without arrhythmia or tachycardia, and other signs of heart failure supervening. The writer found that a definite amount of work, which in the young raised the pulse-rate from normal to 114 or 140 and caused no dyspnœa, could not as a rule be performed by those over sixty. A less amount of work produced dyspnœa, due to incomplete evacuation of the ventricles and arrhythmia, but the pulse-rate seldom rose more than 10 beats in the minute, for instance, from 62 before the exercise to 72 after it. Thus in the aged the heart may fail while the pulse-rate is still comparatively low.

Malignant Endocarditis.—H. Jackson[11] has contributed an interesting study of fifty-nine cases. The condition is usually secondary to some acute infective disease, such as pneumonia or diphtheria, or to some suppurative process which has given rise to septicæmia; but in many cases no cause is obtainable. He considers that in the differential diagnosis of the disease the most important points are: (1,) Evidence of some heart lesion in the past, especially if there has recently been some infective or suppurative disease; (2,) Such early symptoms as fever, rigors, joint pains, vomiting, cough, and weakness; (3,) In the later stages irregular fever, rigors, and cough, with delirium, stupor, and petechiæ, and especially any clinical phenomena suggestive of emboli, such as localised paralysis; (4,) Leucocytosis (which is absent, or at least very rare, in typhoid fever and acute tuberculosis).

In the diagnosis of the same disease Janeway[12] lays some stress on the value of small hæmorrhages in the palms of the hand and the soles of the feet, or again of hæmorrhages in the conjunctiva.

Fatty Infiltration of the Heart.—Anders[13] discusses this subject in connection with cardiac over-fatness in an interesting article, which, however, does not readily lend itself to abstraction. The following points are suggested on its perusal: That the overloading of the heart with fat in obese persons is only attended in a small minority of cases by actual fatty infiltration of the cardiac muscle. That fatty degeneration is also rare; and when it occurs, is usually associated with arterio-sclerosis. That when infiltration and degeneration can be excluded, the prognosis of fatty incrustation is favourable under proper treatment. That, on the other hand, fatty infiltration may, and often does, lead to fatty degeneration, and that in these cases the prognosis is much more unfavourable. That among the more characteristic signs of infiltration are marked and constant disturbance of the cardiac rhythm; asthmatic attacks, especially after a full meal; passive bronchitis with cough and expectoration,

and the occurrence of anginal attacks, occurring with obesity of an anæmic type.

PROGNOSIS.—In his admirable Lettsomian lectures for the past year Mitchell Bruce[14] has some wise words on the prognosis of cardiac disease in middle and advanced life. He first points out the necessity of a careful and particular diagnosis, laying stress upon the etiological factors, among which he regards tobacco, alcohol, gout, syphilis, and strain as the most important. In the *tobacco heart* the prognosis is favourable under the influence of abstention from the cause ; and he admits that he has not seen serious damage done by tobacco alone in sound hearts, nor arterial sclerosis as recorded by some authorities. In the *alcoholic heart* the prognosis is far more unfavourable for two reasons : (1,) When the habit is established the patient has neither the inclination nor the will-power to reform ; and (2,) The frequency of associated disease of a serious kind elsewhere.

In *gouty* cases prognosis is difficult. With careful management a large proportion may greatly improve and go on fairly well for some years ; but the improvement cannot be of indefinite duration. For, in addition to the extrinsic risks of Bright's disease, cerebral hæmorrhage or thrombosis, and bronchitis, there is always the intrinsic danger of coronary degeneration, and consequent cardiac degeneration or angina. In *syphilitic cases* the prognosis is still more unfavourable ; only one half of his cases improved at all under treatment, and 20 per cent. died at most within a few years. In cases dependent on *physical strain* in middle-aged persons otherwise healthy, the prognosis is favourable, and the condition is not fatal. Nor in those over forty years of age are the results anything like as grave as might be supposed. But it must be remembered that there is a great liability to relapse of trouble after marked exertion. Disorder from *nervous strain* is amenable to treatment by complete and prolonged rest in the majority of cases. Still death may occur from sudden cardiac failure ; and when advice is neglected, there is considerable danger of extrinsic morbid complications.

In attempting to forecast any case of cardio-vascular degeneration we must never forget the possibility of intercurrent acute disease ; and in the application of the above principles to individual cases it is equally necessary to estimate correctly the patient's personal circumstances, character and disposition.

TREATMENT.—A review of the literature on this subject during the past year reveals no new remedies of value, but it distinctly marks a more exact knowledge of current remedial measures, and consequently a more intelligent and rational attitude with

regard to their employment. A few points demand brief consideration.

First, with regard to the respective claims of **Rest** and **Exercise.** So much prominence has been given of late to the advantage of various forms of exercise in selected cases of heart disease, that there is a tendency to under-rate the claims of rest. And yet, when all has been said and done, rest undoubtedly takes the foremost place among remedies for a disturbed or failing heart, especially rest in the recumbent posture. Rest places the whole circulatory mechanism on a lower plane of activity; and, if patiently carried out, gives an opportunity for a natural re-establishment of hydraulic equilibrium on that plane as a necessary preliminary to the next step forward. It is often irksome, but the natural desire to please our patient and his friends should not be permitted to over-rule our better judgment. Moreover, it gives opportunity for a better knowledge of the exact condition with which we have to deal, and for a truer estimate of our patient's native resources; also, if other remedies are afterwards employed, it affords a much better chance of appraising their effects. It should, therefore, be an invariable rule in the treatment of heart disease to first ascertain what can be accomplished by substantial rest.

Exercise may be needed in the treatment of heart disease for three different purposes: (*a*,) To promote a proper standard of general nutrition; (*b*,) To reduce resistance in the peripheral circulation; and (*c*,) To train up the heart for harder work. Different kinds of exercise fulfil these indications in relatively different degrees. Thus, massage may be taken as a type of that required for the first purpose; slowly executed resistance-exercises, for the second; and active exercise, such as hill-climbing, for the third. All authorities appear to agree that whenever prolonged rest is needed, massage is almost essential to maintain an adequate circulation of the body-fluids and to neutralise the retarding effects of prolonged rest upon nutrition. With regard to resistance exercises, the all-important point is the selection of fit cases. Vaguez[15] says that they are not suitable for cardiac excitement, palpitation and tachycardia, nor for cases of arterio-sclerosis with excessive arterial tension and albuminuria. Scatterthwaite[16] has recommended exercises consisting of flexion, extension, adduction, abduction, and rotation of the limbs, neck and trunk by the patient, while the operator resisted. Between each single movement there was an intermission. Certain respiratory passive movements he had also found exceedingly useful. For patients in bed, they were instructed to lie on the back while the operator passed his hands under the chest and raised it slowly without

lifting the person actually from the bed. This movement was specially adapted to obese patients, or to cases of cardiac dropsy. Each respiratory movement was in the direction of artificial respiration, and should be repeated from one to five times a minute. For stronger patients, they were instructed to sit on a stool while the operator, standing behind, grasped the axillæ, the arms being raised, and raised the patient upward, at the same time bending him backward. The various exercises should be so interwoven as to give a pleasing variety. The *séance* at first should not last more than fifteen minutes.

With regard to the employment of exercise in the heart-diseases of children, J. M. Taylor[17] says that in carefully selected instances the use of regulated activities afforded much relief to many of the distressing symptoms which accompanied and followed disordered conditions of the heart. The term "exercise" should be clearly kept in mind as being a normal use of the bodily parts—not merely of the muscular system, as it is usually understood, but particularly the inter-relation of the viscera and their mutual co-operation. The first and most important item is that the individual should learn to sit, stand, and move in proper attitudes, for only thus could this symmetrical activity of the various parts be maintained. The next is to secure and practise full flexibility of the moveable joints and skeletal tissues. An invaluable form of exercise is the act of breathing correctly, which should be taught, enforced, and practised. Dr. Taylor also relates his experience in adapting these measures to children, showing what remarkable results are sometimes brought about by movements which seem to be of the simplest sort. Among these he mentions readjustment of the muscles of the trunk and limbs, also stretching, both active and passive, and the cautious use of massage and baths. Most of the movements should be begun in the recumbent posture, and all should be followed by long periods of rest, lying down. Each individual case must be carefully studied, and the rules governing it should be formulated from watchful experience.

The Nauheim system of carbonated **Saline Baths,** as is well known, may be frequently used with great advantage in association with exercises of this second group.

The employment of systematic active exercise in the treatment of heart-disease has not been very generally taken up in this country, but the work of Oertel and others shows that it deserves attentive consideration, after the establishment of fair compensation, as a means of permanently strengthening the heart.

Digitalis.—Sir Lauder Brunton,[18] in a paper read before the International Congress in Medicine, describes very clearly the present state

of knowledge as to the pharmacology of this drug. Arnold and Wood[19] also write on the same subject (see p. 21). From these papers it appears that great caution should be observed in the therapeutic use of the active principles of digitalis, especially with regard to digitoxin. According to Hare,[20] among common mistakes in the use of digitalis, the following occur : (1,) That too much is expected from it ; (2,) That too large a dose is given ; (3,) That it is given at too short intervals (he recommends a moderate dose three times in twenty-four hours) ; (4,) That it is often given in conditions of high arterial tension without first or simultaneously reducing this tension to an approximately normal degree (he prefers the nitrites for this purpose) ; (5,) That it is used in cases of advanced cardiac degeneration, which is not only useless, but harmful with regard to the administration of digitalis in aortic regurgitation. Hare recognises that it may sometimes be beneficial, though, as a rule, it is contra-indicated ; but he does not advance any criterion for distinguishing the one group from the other. He recommends that in all experiments in such cases the patient should be kept to bed. Finally, he remarks that digitalis is often contra-indicated by marked gastric disturbance. An editorial writer[21] in the same publication, commenting on the treatment of heart-disease in children, points out that digitalis is not so generally useful, and that **Strophanthus** is to be preferred. Thomson[22] says that in many cases of cardiac degeneration in which neither digitalis nor strophanthus are well borne, a very good pill may be given instead as follows :—

Spartein Sulphate	gr. j	Caffeine Citrate	gr. jss
Powdered Squill	gr. ss	Strychnine	gr. $\frac{1}{30}$

Strychnine in Cardiac Weakness.—Baumgarten[23] is of opinion that in order to obtain the best results from its administration in heart weakness, strychnine must : (1,) Be given in small doses, because large doses, apart from the undesirable effect upon the entire spinal cord by raising the blood-pressure, immoderately increase the resistance to the heart's action long before they can come to its assistance indirectly ; and (2,) It must be employed at a time when the strength of the heart has not yet sunk too low. If Binz is right in stating that strychnine does not produce the elevation of the blood pressure by stimulating the vaso-motor centre, but by increasing its reflex irritability—and hence peripheral impulses are required to accomplish the contraction of the vessels, then strychnine must fail us in that very state of collapse in which modern routine so often continues to use it as a last resort. We do indeed sometimes succeed, under conditions which it is easier to divine than to recognise, by its

use, in preventing or delaying impending collapse; but when collapse has once set in, he is convinced the drug is of no good effect. Moreover (3,) It must not be given even in moderate doses for too long a time, because, like digitalis, it may accumulate in the body. Physiologists and pharmacologists seem to be better informed as to the cumulative effects of strychnine than the clinicians. Lauder Brunton calls it "a cumulative poison, as it contracts the renal arteries and thus prevents its own excretion."

The present writer would especially enforce the fact referred to in the foregoing extract that, while strychnia is an excellent heart tonic for *occasional* use in order to meet an emergency, it is not suitable for prolonged administration in any but the smallest doses, and that this is especially the case with the young and in nervous subjects, since it induces a curious nervous irritability, undue excitement of the heart, and increase in the frequency of the pulse.

Diuretics in Heart-disease.—In chronic cases of mitral insufficiency with general cardiac dilatation, much dropsy and cyanosis, **Mercurials** are of great value. The best formula is the old-fashioned combination of digitalis, squill, blue-pill, and extract of henbane, of each 1 grain, in a pill, three times a day. Diarrhœa and chronic nephritis rank as the most important contra-indications. Morison[24] has a good paper on this subject. MacLaren[25], in an abstract of his graduation thesis, refers to the value of **Diuretin**. He studied its effects in twelve cases. Polyuria occurred in nine, increased diuresis setting in within twenty-four hours of the administration of the drug in six cases. The urea eliminated was sometimes increased, sometimes diminished. The pulse tension was invariably lowered. Toxic symptoms were produced in six cases, diarrhœa, giddiness, or vomiting being present on the third or fourth day. The advantage obtained by ordering this drug in preference to others is the rapidity with which it acts. Diuretin should be given in doses of not less than 15 grains every four hours, in a little peppermint water.

Heinrich Stern[26] states that **Adonidin**, notwithstanding its most prompt and energetic action, may be safely administered in pathological conditions where digitalis, if given at all, should be administered only with the utmost caution. This refers to fatty degeneration of the heart, pericarditis, simple hypertrophy, compensatory hypertrophy and certain atheromatous conditions. In rapidity of action adonidin almost equals nitro-glycerin. In this respect it far surpasses the usual heart remedies, as digitalis, digitalin, digitoxin, caffeine, spartein, strophanthus, convallaria, and convollamarin. In certainty of action it equals nitro-glycerin, and surpasses by far

caffeine, spartein, convollamarin, strophanthus, and digitalis or its glucosides. In permanency of action, although no cumulative effects were ever noted, it surpasses nitro-glycerin, caffeine, convollamarin, spartein, digitalis, digitalin, and digitoxin. Its diuretic action in health is limited. The dose varies from $\frac{1}{30}$ to $\frac{1}{10}$ of a grain two or three times a day; $\frac{1}{6}$ of a grain administered in any form influences the œdematous conditions and produces diuresis, especially when the arterial tension is low.

Suprarenal Capsule.—Floersheim[27] has published a preliminary report on the effect of dry powdered **Suprarenal Gland** in diseases of the heart. The report is too long and technical to abstract here, but it may be noted that the drug appears to have a markedly tonic influence, due to its direct action upon the heart muscle. In many cases the action became more regular, the force increased, and the pulse became full and strong. The most beneficial effect was in cases of dilatation with weak pulse, diffused apex beat, and fluttering and irregular action. In two cases carefully observed he found fully a quarter of an inch contraction on each side of the heart; also the apex beat, which was diffused and difficult to locate, became more obvious and localised. The matter is one which demands further enquiry.

Sleeplessness.—Gibbes[28] considers that **Opium** and **Morphia** are the most trustworthy sleep-producers, especially when pain is present. Yet neither should be given until other means have failed, and always with care, and their effects should be closely watched. He thinks, however, they are safer than some would lead us to suppose. A better hypnotic result may sometimes be obtained by gr. $\frac{1}{4}$-$\frac{1}{2}$ of opium three or four times a day than by a larger dose at night. In other cases he gives gr. $\frac{1}{6}$ of opium every hour for five or six hours during the latter part of the day. **Chloral Hydrate** should only be given when the arterial tension is high, owing to its depressant effects **Chloralamide** is less depressing. **Trional** is very useful, and much safer than chloral or chloralamide, but is not satisfactory when pain is present. [The writer finds that trional acts much more quickly and efficiently if dissolved in a little warm whisky or brandy and then diluted with water.] Sulphonal acts in the same way, but is slower. **Paraldehyde** is especially useful and safe. As it slightly irritates the stomach, however, it is not always advisable to give it when there is much dyspeptic trouble. He also speaks highly of **Chloretone** as a perfectly safe and valuable hypnotic. He generally gives 15 grains at bedtime, and repeats the dose in two hours if required. When there is much nervous excitement he gives $1\frac{1}{2}$-2

grains three times during the day as well. The bromides are chiefly indicated where the neurotic element predominates. Alcohol will in many instances promote sleep before heart failure has far advanced and where restlessness is great; it should, however, only be given in small doses, just as the patient is settling down to sleep. If the arterial tension is very high it is worse than useless, as it may then increase the sleeplessness. In the later stages it may have a soothing but not a hypnotic effect.

Anti-streptococcic Serum in Malignant Endocarditis.—Michell Clarke[29] records a case in a woman, aged twenty-two years, in which recovery followed. She received in all 210 c.cm. of a **Streptococcus Serum** obtained from the Jenner Institute. The dose was 10, 15, or 20 c.cm. (once). Clarke concludes thus: Since recovery from ulcerative endocarditis is very rare, it may be objected that this was not a case of that disease, but should rather be considered one of rheumatism with pericarditis. But in favour of the former diagnosis are: (1,) The presence of a chronic valvular lesion on which an infective process is apt to graft itself; (2,) The fact that the illness did not yield to the several salicylic compounds, which were tried in full doses without effect; (3,) The occurrence of a pulmonary infarct; and (4,) The steady progress of the patient from bad to worse until treatment by serum was begun, which treatment, again, would have had no influence on acute rheumatism.

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HERNIA.

Walter G. Spencer, M.S., M.B., F.R.C.S.

Cure of Inguinal Hernia.—One evidence of the successful treatment of hernia is the diminution in the number of strangulated, and therefore dangerous, cases which the surgeon now sees. Delbet furnishes another, *viz.*, from the statistics of a Truss society. Of fifteen hundred and sixteen inguinal hernias fifteen hundred and

nine had not been treated by any operation, and seven only had recurred after operation. This small number of recurrent cases, when the enormous number of operations performed for the cure of hernia in the Paris hospitals is taken into account, shows that the results are very favourable, and in most instances real radical cures Surgeons employ various modifications of the chief types, especially of Bassini's operation, in spite of the displacement of the cord occasioning sometimes congestion, inflammation, or atrophy of the testicle. This method, however, cannot be viewed as free from recurrences, for Phelps[1] says that he has, since 1892, operated upon forty-six recurrences after Bassini's operation and forty-one after other methods.

Phelps and other American surgeons recommend the use of buried sutures of silver wire, on the ground, curiously, that such a non-absorbable material exercises a continual influence by holding the tissues together. Most surgeons would probably consider three weeks as about the limit of usefulness of any buried suture whatever. Kangaroo tendon seems to be the most generally recommended suture material.

Cure of Crural Hernia.—After tying of the neck of the sac and fixing the stump behind Poupart's ligament, the general custom is to draw some fibres of the pectineus forwards and upwards to Poupart's ligament. A method proposed by Parry[2] is to bring down the internal oblique and transversalis behind Poupart's ligament by sutures passed through Fowler's and Gimbernat's ligament, so as to close the abdominal entrance to the crural canal.

Cure of Ventral Hernia.—Hemmesfahr[3] frees both the anterior and also the posterior surface of the recti muscles without opening their sheaths. He then draws the outer edges together, thus turning the inner inwards, so as to form a ridge along the middle line projecting towards the peritoneal cavity.

Rarer Forms of Hernia: Hernia of the Bladder.—Harrington[4] describes a case of hernia of the bladder projecting through the pelvic outlet in the perineum of a woman, due to traction by a sub-peritoneal fibroid.

Hernia of the Fallopian Tube without an Ovary.—Morf[5] finds twenty-four authenticated cases recorded, thirteen inguinal, ten femoral, and one obturator. Many of the inguinal were congenital cases seen in children. The femoral cases were mostly in adult women, four occurring during pregnancy. Strangulation took place in fourteen out of the twenty-four. In one case an abscess formed into which the tube sloughed. In one sac there was a tubal

pregnancy full of clot and containing a fœtus 3 inches long. Taxis is inadvisable; the sac should be opened and the tube, if healthy, returned, or if not, excised.

Retro-peritoneal Hernias: Hernia of the Cæcum or Sigmoid with an Incomplete Sac: "Hernies par Glissement," or Sliding Hernias.

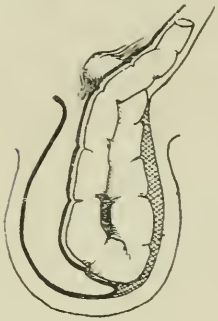


Fig. 26.—Showing the Large Intestine behind the Peritoneum.

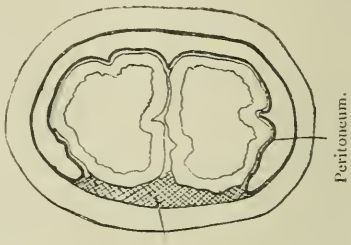


Fig. 27.—Showing the Retroperitoneal Large Intestine in a cross section of the hernia with its incomplete sac.

Weir[6] says these hernias are of interest as being essentially irreducible by taxis, and when exposed the sac is found more or less incomplete, especially on the posterior aspect of the gut. The gut may be so loosely attached to the retro-peritoneal tissue that it may be apparently pushed back by taxis, but quickly slides down again in spite of a truss being worn. On finding the cæcum or sigmoid flexure with the sac covering only a portion of the gut, Weir frees the bowel from its retro-peritoneal attachment, and covers this raw surface of bowel with a flap of peritoneum cut from the sac (see *Figs.* 26, 27, 28) so that the bowel, as returned to the abdomen, has a complete peritoneal covering. Of ten sigmoid hernias, five were cases which had a complete sac, and the loop of bowel had a long mesentery; five were sigmoid hernias which had slid down behind the peritoneum, three of which were easily pushed back, but

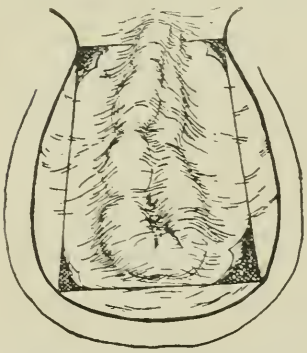


Fig. 28.—Outline of Peritoneal Lining of Sac utilized as a flap to cover posterior surface after it has been freed by dissection.

two required to be treated as above. Of four cases of cæcal hernia, three had a complete sac and were readily reduced; the remaining case involved the cæcum and ascending colon; it was freed by dissection, the raw surface covered by peritoneum from the incomplete sac, and then reduced.

Hernia in Association with Volvulus.—The concurrence of these two conditions renders the case doubly difficult and dangerous. Knaggs[7] refers to four groups of cases: (1,) Where the neck of the volvulus is either within the hernial sac or close to the ring, the volvulus having arisen by vigorous and irregular peristalsis in the sac, or the volvulus has originated in the abdomen and has been forced as such into the sac; (2,) In which the contents of the sac are involved in the volvulus, but the neck of the volvulus lies well within the abdominal cavity; (3,) A volvulus produced within the abdomen by the reduction of the hernia; (4,) A volvulus within the abdomen more or less connected in origin with the hernia, *e.g.*, by the dragging of the bowel as the hernia descends. Form 3 may be avoided by rejecting taxis where any resistence is met with or where strangulation has set in, lest half-paralysed bowel be returned. Should forms 1 or 2 apparently slip back under taxis, the persistence of the signs of obstruction and of an abdominal swelling will indicate the necessity for laparotomy. But the greater certainty and safety of generally preferring incision to taxis is in no case better illustrated. A free opening must be made extending upwards, if necessary beyond the internal ring. The twisted omentum must be pulled down until healthy omentum is reached above the site of torsion before applying the ligature (Von Baracz).[8] The loop of bowel must be pulled down and spread out until all twists or bands come into view, and until healthy bowel is reached above and below the site of the volvulus. Having untwisted the bowel and divided adhesions, the surgeon may decide to return it and fix the gut at points to the parietal peritoneum, lest the half-paralysed gut relapse into a twist, or he may find that it is impossible to avoid resection of the gangrenous bowel. The formation of an artificial anus instead of resection would only offer a possible chance of recovery in the case of the colon.

Auto-reduction of Hernia: "Reduction En masse."—Walsham[9] has met with seven cases of abdominal obstruction due to the reduction of the strangulated hernia and sac by the patient himself. He refers to the importance of obtaining an accurate history from the patient, or, failing this, of not relying solely on the observation of the hernial rings being free. Especially should it be suspected if the patient has had a hernia at any time and has worn a truss. In one case the hernia

had been reduced with a good deal of trouble two months before the acute symptoms set in By recognizing the case and making a small incision just above the ring, the cause of the obstruction being thus quickly found and relieved, a case may recover which would not do so if the abdomen has to be freely opened and generally explored before finding the cause of the obstruction.

Strangulated Retro-cæcal Hernia.—Neumann,[10] in the course of a laparotomy for intestinal obstruction, found a hernia in a retro-cæcal pouch, which was successfully relieved.

Strangulated Obturator Hernia.—Elder[11] found, in the course of laparotomy for intestinal obstruction, that it was due to an obturator hernia, which he relieved.

Resection for Gangrenous Hernia.—J. Hutchinson, jun.[12] concludes in favour of treating gangrenous hernia by resection, and of using a simple suture rather than any special apparatus. Eleven cases of perforated gangrenous hernia treated by other methods all died. Of fourteen cases resected and united by Murphy's button, one recovered, *i.e.*, 7 per cent.; of fifteen cases resected and united by simple suture, seven recovered, *i.e.*, 46 per cent.

McArdle[13] arrives at the opposite conclusion as to the method of union. He had had eight cases in his own practice of resection with the use of Murphy's button in which there were no deaths, and only three deaths occurred among forty-eight recorded cases.

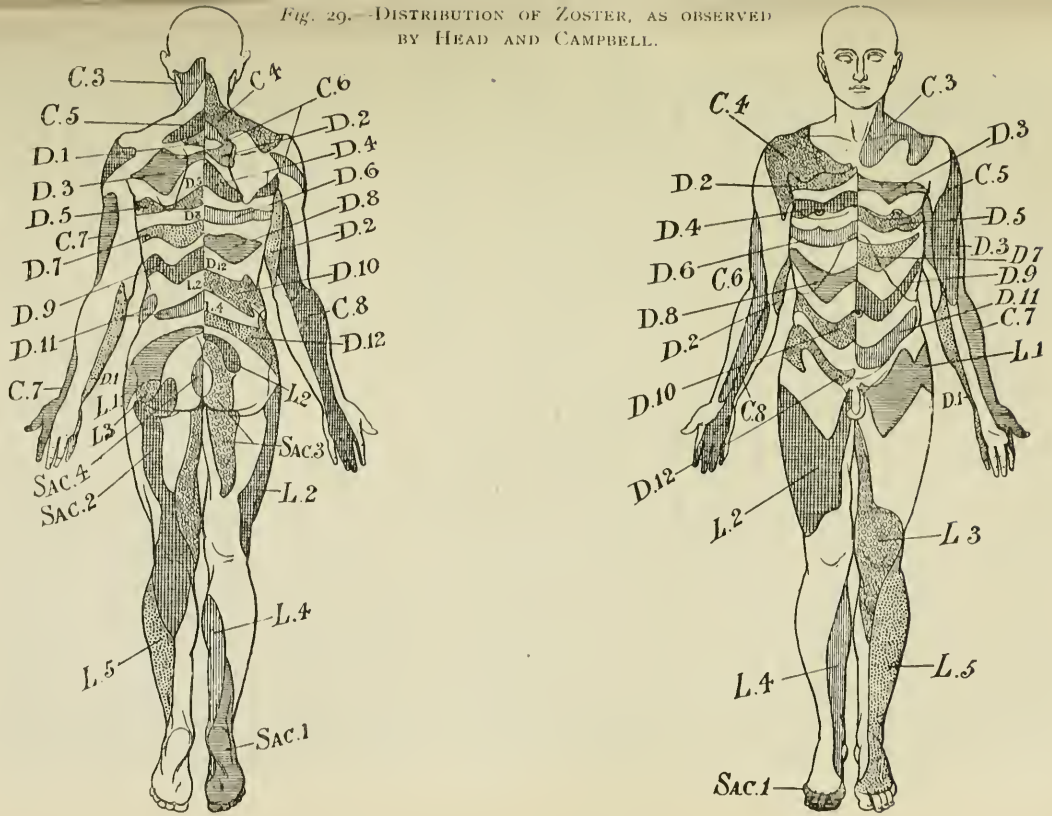
REFERENCES.—[1]*New York Med. Rec.*, Sept. 20, 1900, p. 441; [2]*Brit. Med. Jour.*, 1901, ii, p. 1136, Oct. 19; [3]*Cent. f. Chir.*, 1901, p. 267; [4]*Ann. of Surg.*, Sept., 1900, p. 369; [5]*Ibid.*, March, 1901; [6]*Med. Rec.*, Feb. 24, 1900; [7] *Ann. of Surg.*, April, 1900; [8]Von Baracz, *Brit. Med. Jour.*, June 23, 1900, Epit. i, p. 98; [9]*Brit. Med. Jour.*, March 23, 1901, i, p. 691; [10]*Cent. f. Chir.*, 1901, p. 387; [11]*Ann. of Surg.*, Aug., 1900, p. 73; [12]*Clin. Soc. Trans.*, 900, vol. xxxiii, p. 71; [13]*Dublin. Jour. of Med. Sci.*, Feb and March, 1900.

HERPES ZOSTER.

Norman Walker, M.D.

There are two events of great importance in connection with this disease which have emerged during the past year. One is the absolute demonstration, by means of the Manchester beer-poisoning epidemic, of the fact which was familiar to many, that **Arsenic** was in many instances directly responsible for the outbreak. Indeed, it was the prevalence of herpes which first suggested arsenic as the probable cause of the mysterious epidemic. The other important event is the publication of a paper by Head and Campbell,[1] who have followed up a number of cases, generally in asylums, and have examined the nervous system after the patients' death, which took

Fig. 29.—Distribution of Zoster, as observed by Head and Campbell.



place at periods varying from days to years after the appearance of the eruption. In every instance they found changes in the posterior root ganglion, consisting of an acute interstitial inflammation, accompanied by necrosis of the ganglion cells. No sign of bacterial infection could be found. The dorsal part of the ganglion was usually attacked, and usually only one ganglion suffered. There was generally some extravasation of blood. In the posterior nerve roots, and in the peripheral nerves, the changes are just those which might have been expected from the lesion of the posterior root ganglion, *viz.*, an acute degeneration followed by a greater or less amount of secondary sclerosis in the nerves. The degeneration could be traced to the fine twigs supplying the skin at the seat of the eruption. Zoster of the trigeminal is associated with a lesion in the Gasserian ganglion. From examination of 450 cases, confirmed by autopsy in twenty-one, the authors have constructed a diagram, of which we are enabled by their kindness to give a copy (*Fig.* 29), showing the areas of skin occupied by the eruption in affection of the different ganglia. They observed in their cases evidences of epidemic occurrence, and suggest that zoster is to be looked upon as analogous to the infective fevers, the eruption corresponding to the rash.

Arkwright[2] describes two cases where the distribution of the eruption was general. He points out that while it is common enough for eruptions to a little over-lap Head's areas, this erratic distribution is very difficult of explanation.

Dopter[3] records an instance where a slight epidemic of sore throat which occurred in a regiment of soldiers, was associated with an epidemic of zoster.

REFERENCES.—[1]*Brain*, 1900, p. 353; [2]*Barth. Hosp. Jour.*, Aug., 1900; [3]Quoted *Amer. Jour. Med. Sci.*, April, 1901.

HIP (Congenital Dislocation of). *Keith Monsarrat, F.R.C.S.E.*

PATHOLOGICAL ANATOMY.—Anatomical changes in this condition are, on the one hand, those of the acetabulum, and on the other those of the femoral head and neck. In early life the first are the more pronounced, the femoral peculiarities becoming progressively more marked as the child grows older. Joachimsthal[1] has recently demonstrated five preparations showing the changes which occur in later life. In all the acetabulum was present and distinct; it was small and flat, but in some cases deep enough for a much-worn head to find a place in abduction. The specimens further showed that the acetabulum loses its normal shape, and is reduced to a more or less plane surface whose upper and posterior boundary projects like a wall, whereas that next the obturator foramen has no definite

wall. On three of the pelves shewn the position of the displaced head was to be seen above and behind the back wall of the acetabulum. The head and the whole of the upper part of the femur showed marked atrophy in all cases.

In addition to these deformities, the axis of the femoral neck is usually altered. On the one hand, in the frontal plane the normal angle with the shaft (120°) is in most cases much reduced, but in others increased; on the other hand, there is usually a forward twist of the neck so that the posterior and inner surface of the head is in contact with the pelvis and flattened.[2] The capsule is also much altered; it forms a spacious cavity around the head, but below, where the ilio-psoas crosses it, it is much narrowed, so that its shape is somewhat hour-glass-like. Lorenz considers this the most important of all the obstacles to reduction.

Bade[3] has shown that in unilateral cases there is usually some alteration in the apparently sound hip, demonstrable by the X-rays. Of ninety-four cases in Hoffa's clinic, twenty-five showed such changes. These were for the most part similar to those in dislocation, only less pronounced. In one case the changes in the acetabulum were such that Hoffa expressed the opinion that it was a case of dislocation spontaneously cured *in utero*. In two cases there was luxation on one side and coxa vara on the other. Bade concludes that the luxation is secondary to some morbid process occurring early during fœtal life, and of unknown cause; if this is not marked dislocation may not follow.

It is well known that this deformity is more common in the female than in the male sex. Hoffa, between 1887 and 1893, met with eight cases in boys and fifty-four in girls; Lorenz, between 1883 and 1894, observed thirty male and 223 female cases; Kirmisson records 168 cases—146 in girls, 22 in boys. In England it is not a common deformity.

Kirmisson[4] does not favour the theories of causation which would ascribe the deformity to pathological changes in the joint; he prefers to speak of it as a dysarthrosis due to arrested development, and involving not only the cotyloid cavity, but all the constituent elements of the joint. He maintains that this theory, of a fœtal condition of the joint, explains all the facts both of cases where the femoral head and cotyloid cavity are absent, and of those where all the joint constituents are present but irregularly developed.

Examination.—The examination of cases of congenital hip dislocation has been rendered much more exact by the use of the X-rays. Hildebrand[5] remarks that many points in the anatomy have been

elucidated by the use of this method of examination. A simple shadow, however, gives only information as to the position of the femur in a frontal plane; it tells nothing of its sagittal position, the relation to the acetabulum, etc. He recommends **Stereoscopic Radiography.** In ordinary photography two cameras are used and both pictures are taken simultaneously, but this cannot be done in radiography; two separate exposures must be made, and the plate must be changed without altering the relation of parts. For this purpose he has designed a frame to carry a plate 40 cm. by 50 cm., covered in partly by tin and partly by paper permeable to the rays; half the plate is first exposed, the rest being protected by the tin covering; then the position of the spark is moved 7 cm. to one side or the other, and the second picture is taken on the remaining half of the plate.

TREATMENT.—(1,) **Apparatus.**—Little is to be hoped from the use of any apparatus hitherto devised. That designed by Hoffa keeps the limbs abducted and extended, and may be of service in early childhood before active treatment is undertaken. The same may be carried out by a suitable modification of the Thomas's double hip splint.

(2,) **The Bloodless Method of Reduction.**—The method of Lorenz[6] is the representative procedure. He considers this preferable to the operative because (*a*,) the mortality of the latter is from 2 to 10 per cent.; (*b*,) troublesome ankylosis is liable to follow it; and (*c*,) the injury to or extirpation of the acetabular cartilage may result in subsequent deformity of the pelvis on account of disturbances in development. Bloodless reduction, he says, under narcosis is entirely without danger within the proper age limits. These are, for unilateral dislocation the ninth to tenth year; for double dislocation seventh to eighth year. Reduction is carried out either over the upper rim of the acetabulum by means of horizontal extension, or over the posterior rim by means of vertical extension. The latter is preferable, and is performed in the following manner: First, the tense adductor muscles are torn by forcible abduction and manipulation in this position. Secondly, the thigh is flexed to a right angle, and vertical extension is carried out, followed by abduction to about a right angle, pressure being made on the trochanter at the same time. The slipping of the head over the prominent posterior rim of the acetabulum is easily recognised. To keep the head in position the thigh must be fixed in extreme abduction and slight over-extension for four to five months. For this position is then substituted one of slight flexion and lessened abduction for another

similar period, during which the patient should be up and about. Finally, massage and gymnastics are employed, and supports are dispensed with. Lorenz has obtained an anatomically good result in about one half of all cases; in the others the head eventually lay between the acetabulum and the anterior superior spine. Even in these cases the functional results have been good; very much better, he says, than the results of the reduction by open operation. If reduction by the bloodless method is unsuccessful, arthrotomy must then be performed, the after-treatment being similar to that carried out in the bloodless method; he does not recommend the deepening of the acetabulum.

(3,) **Open Operation.**—Hoffa[7] recommends the bloodless method in the first instance in all cases, open operation only if this is unsuccessful. He considers that the age limits for the latter procedure are from the third to the eighth year. The one danger of the operation is sepsis, otherwise the procedure is not dangerous. The after-treatment is of great importance; by this means contractures can be avoided; if contracture in the position of flexion and adduction should occur, it may be treated by a sub-trochanteric osteotomy. Ankylosis is only to be expected if suppuration occur. After the eighth year transverse sub-trochanteric osteotomy or oblique osteotomy are suitable, and preferable to Lorenz's plan of reposition by operation without the formation of a cotyloid cavity. The duration of treatment is about four months. The technique of the operation is as follows: The thigh is extended, and an incision is made downwards and backwards from above and in front of the trochanter for about 6 cm.; the gluteus maximus is drawn upwards, and, the limb being abducted, the capsule is incised. The anterior part of this capsule is divided as far as its attachment to the pelvis, the head is freed, and the new acetabulum is gouged out; the head is then placed in position. Hoffa has performed the open operation 248 times, with a mortality of about 4 per cent. he has, however, had no fatal cases among the last 132.

Doyen[8] thinks that radical cure is only possible by the open operation; he attaches much importance to the formation of the new acetabulum; after operation he keeps the limb in a position of abduction and inward rotation.

Lane,[9] finding it impossible in some cases to place the upper end of the femur in a cavity cut in the position of the acetabulum, determined to evolve a joint beneath the anterior inferior spine of the ilium. The mechanical advantages of this position are great, compared with a position above and behind on the dorsum ilii. An incision is

made backwards from the anterior inferior spine along the upper limit of the femur, the structures superficial to the capsular ligament cut through, and the ilio-femoral ligament defined and divided at its iliac attachment. The soft parts are then divided until it is possible to rotate the articular surface of the femur outwards and bring it forwards to the same horizontal plane as the anterior inferior spine; the upper end is shaped with a chisel and file to form a blunt cone. A cavity is then cut in and beneath the anterior inferior spine, and the newly-formed head placed in it, and retained by sewing the anterior ligament to the bone and rectus-tendon, wire being used. Additional fixation may be obtained by passing thick silver wire through the trochanter neck and head of the femur and through the floor of the new cotyloid cavity; this, however, is rarely required. In regard to age, Mr. Lane says: "In choosing time to operate I would be guided by the knowledge of the following law, which I think is true. The younger the subject, the sooner is a new joint developed, and the more perfect are the structure and mechanism of the articulation evolved."

Kirmisson[10] looks upon forcible reduction of any kind as a last resource only. He emphasises the necessity of beginning treatment early between the ages of eighteen months to two years. At this age he has found that all that is necessary is continuous extension followed by retentive apparatus. If this be employed for several years it will give, he says, a considerable proportion of successes. On the other hand, Lorenz (*loc. cit.*) has found gradual reduction by this method only of use in very young children, and considers the necessary confinement to bed for such a long period almost prohibitive.

Burghard[11] has operated on five cases by the following method with satisfaction. At a preliminary sitting all tight structures are divided or stretched until the trochanter can be brought down to Nélaton's line and abduction carried to 90° without difficulty. In the second place the capsule is cut down on by a 4-inch incision and opened; the head is protruded and the attachment of the ilio-psoas divided. The capsular attachment to the front of the acetabulum and the rectus tendon is then divided, and the head passed into the acetabulum. An elliptical piece of the redundant anterior part of the capsule is then excised. The limb is fixed in an abducted, outwardly rotated, and slightly flexed position by plaster of Paris. In two of the cases it was not necessary to detach the capsule from the acetabulum.

Results.—Lorenz's results have been already referred to; in

79 out of 135 cases examined by radiography the result was anatomically satisfactory ; in the others there was simply a transposition of the head forwards ; the functional results of this transposition were however good ; lordosis disappeared, and the joint was much more stable. Hoffa has employed the bloodless method in sixty-four cases (forty-two unilateral). Of the forty-two only four showed permanent reduction ; in many others there was a transposition forwards. In the bilateral cases there was never a permanent reduction of both hips ; in four permanent reduction on one side, transposition on the other ; in three complete relapse of both ; in fifteen transposition on both sides with good results. Petersen reports 161 cases from Schede's clinic, with permanent reduction in eight unilateral and two double ; as a result of their experience Petersen and Schede hope only for transposition by Lorenz's method in most cases. This view of Lorenz's procedure is shared by others (Kümmel, Kirmisson, Landerer, etc.) ; Kirmisson especially criticises Lorenz's statement that his method is not palliative but radical, and considers that in view of the experience of others this must be considered a " dangerous illusion." Broca and Monchet[12] report sixty-two cases treated by this method with an anatomically successful result in two only ; in almost all the others there was a transposition of the head forwards towards the anterior superior spine. Burghard (*loc. cit.*) has treated nine cases by Lorenz's method ; only one succeeded in the sense that the dislocation was absolutely and permanently cured ; in five others the functional result was distinctly good ; whilst in two others, and in the single bilateral case in which it was tried, it failed completely.

With regard to Hoffa's method of open operation, he himself says : " It would be an illusion to think that even the most successful operation can re-establish an absolutely normal state of affairs ; although the articulation is refurnished with a cotyloid cavity, the deformities of the femoral head and neck persist." On the other hand, numerous results which must be called good have been obtained. Suppuration has occurred in many cases, with fatal results in several. The operation is in any case long and difficult. Burghard did not find it necessary to gouge an acetabulum in his later cases ; in one operated on by Hoffa's method there ensued such stiffness as almost to amount to ankylosis. Certainly if the gouging of the acetabulum can be dispensed with, ankylosis is less likely to follow. Burghard operated also on five cases by Lane's method, with invariably disappointing results.

Finally, it may be said that an improvement in function may be

looked for from the bloodless methods, radical cure but rarely; the open operation gives very satisfactory results in some cases, but there are dangers immediate and subsequent (ankylosis). It has not been shown that there is any particular advantage attached to methods which aim simply at transposition (Paci, Lane, etc.).

In old-standing cases sub-trochanteric **Osteotomy** is often followed by considerable improvement in gait and conformation.

REFERENCES.—[1]*Deut. Gesell. f. Chir.*, xxx Congress, April 10, 1901; [2]Nicholls and Bradford, *Amer. Jour. Med. Sci.*, 1900, p. 629; [3]*Cent. f. Chir.*, July 14, 1900; [4]*Traité d. Malad. Chir. Congen.*, p. 596; [5]*Cent. f. Chir.*, June 16, 1900; [6]*Ueber die Heilung. d. Angeb. Huftgelenk.*, Wien, 1900; [7]*Würzburg. A. Stuber*, 1900; [8]*Inter. Cong.*, 1900; [9]*Lectures, Med. Pub. Co.*, 1900; [10]*Rev. d'Orthop.*, 1900, p. 289; [11]*Brit. Med. Jour.*, Oct. 19, 1901; [12]*Inter. Cong.*, 1900.

HYDROCELE. *Priestley Leech, M.D., F.R.C.S.*

Winkelmann[1] recommends the following method of operating on hydrocele: Under filtration anæsthesia, the upper portion of the sac is cut into, and the testicle turned out, the tunica vaginalis stripped off and turned inside out. Stitches are passed to prevent the testicle from re-entering the sac. It is replaced within the scrotum and the wound sutured.

REFERENCE.—[1]*Med. Rec.*, June, 1900.

HYDROCEPHALUS. *Robert Abbe, A.B., M.D., New York.*
W. Scott Schley, A.B., M.D., New York.

Up to the present time the attempt to treat hydrocephalus by **Craniectomy** with drainage of the ventricles, or by aspiration through the fontanelles, or **Lumbar Puncture,** or by the very radical method of establishing an opening through the bodies of the vertebræ into the abdominal cavity, has met with but scant success; most of the cases improved have subsequently relapsed. Furthermore, as such operations are not curative, their justification has been doubted by such men as Rotch, Davis, and Koplik.[1] Eccles[2] has, however, just reported a different technique which may promise better things. In a case in which he had previously tapped the lateral ventricle, he opened the anterior fontanelle and pushed a strand of horse-hair about 2 inches long and 15 hairs thick through the brain into the lateral ventricle, and the other end down between the brain and dura. The dura was not sutured; the skin was brought together by stitches and sealed with collodion. No bad symptoms followed the operation, and a steady diminution in the size of the head took place, accompanied by a generally brighter condition. Horse-hair was used,

as in those cases where a metal capillary tube had been employed death had usually followed, while catgut was too rapidly absorbed to allow a satisfactory aperture to form.

Beck[3] has recorded two cases of hydrencephalocele, and a case of encephalocele, in which X-rays were a most important adjunct to direct examination; not only in differentiating the foregoing conditions from meningocele, but in separating these from scalp tumours, and these again from serous and dermoid cysts. His skiagraphs are clear and instructive. The first case, that of a spherical non-pulsating tumour of the naso-frontal region, was diagnosed meningocele, but the skiagraph showed "behind the light shade, representing the fluid, a dark one which had to be interpreted as a solid mass." Operation confirmed the picture diagnosis. An enormous hydrencephalocele of the occipital region was shown to have but a small-sized pedicle in connection with the brain. Fullerton also reports successful excision of a meningo-encephalocele.[4]

REFERENCE.—[1]*Med. Rec.*, May, 1901; [2]*Treatment*, Aug., 1901 [3]*Inter. Med. Mag.*, Aug., 1900; [4]*Brit. Med. Jour.*, June, 1901.

HYPERIDROSIS PEDIS. *Norman Walker, M.D.*

The following prescriptions are recommended[1] for this troublesome malady :—

℞	Balsam of Peru	1	Chloral Hydrate	5
	Formic Acid	5	Alcohol, Absolute	89

S. Apply by means of a pad of wool.

℞	Alumno	4	Starch	15
	Aristol	4		

Sig. Dusting Powder.

℞	Boric Acid	2	Glycerin	100
	Borax	75	Alcohol	100
	Salicylic Acid	75		

M. ft. lotio.

Adler[2] recommends undiluted **Formalin.** The feet should be painted for a few minutes and then allowed to dry. The treatment is inapplicable if there is redness and maceration of the skin. The thin cauterised layer peels off in about four weeks, when the process may be repeated. The application should not extend beyond the soles; if the interdigital folds are affected they should be dusted with **Tannoform.**

In axillary hyperidrosis Kolpinski[3] recommends shaving, and ironing the surface with the **Thermo-Cautery.** He says that no other treatment, either local or general, is required.

REFERENCES.—[1]*Med. Rec.*, Nov. 3, 1900; [2]*Deut. Med. Woch. Therapeutic Supplement*; [3]*New York Med. Jour.*, Nov., 1900.

HYPODERMOCLYSIS. (See "Transfusion.")

HYPOSPADIAS. *Keith Monsarrat, F.R.C.S.E.*

Few plastic operations are more frequently attended by disappointing results than those in common use for hypospadias. The plan of operating by stages, specially inculcated by Thiersch and Duplay, brought about much improvement in results, but failures are not uncommon. The new methods here described are more promising.

(1,) *Balanitic Hypospadias.*—Breuer[1] has described a new operation for balanitic hypospadias which he ascribes to Bardenheuer; Von Hacker also claims to have originated the method, but it appears that both must yield to the claims of C. Beck, who first described it in the *New York Medical Journal*, Jan. 29, 1898. The

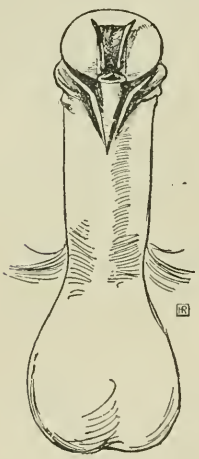


Fig. 30.

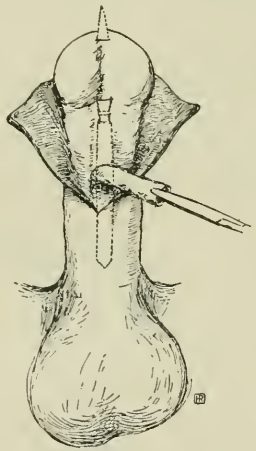


Fig. 31.

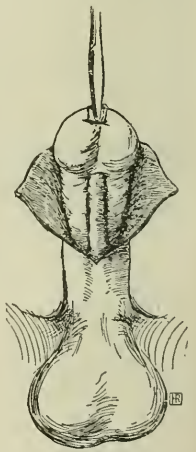


Fig. 32.

steps are as follows: First, a transverse incision is made across the lower surface beneath the glans embracing the hypospadiac opening; from the point where this crosses the urethra a second incision is carried backwards in the line of the channel so as to expose about 1 inch to 1½ inches. The urethra is then thoroughly freed from its bed as far as this incision allows (*Fig.* 30). In his original paper Beck prepared the glandular gutter in the way seen in *Fig.* 30 for the reception of the freed urethra; later, however, he[2] modified this by adopting a plan which appears to have been first suggested by V. Hacker.[3] This consists in passing a fine knife from the

proximal end of the gutter through the tissue of the glans to the apex (*Fig.* 31); a channel is thus formed through which the distal end of the freed urethra is drawn by a pair of fine forceps (*Fig.* 32); a stitch fixes it in this position. This is undoubtedly an improvement on the other procedure. The edges of the incisions are then brought together by a few stitches of fine horse-hair. Under certain circumstances this method is not suitable, *e.g.*, when the glandular furrow is very deep, or when the peripheral part of the urethra does not permit of the necessary stretching. Watten[4] has devised a method to meet such conditions. A vertical incision is made from the urethral orifice backwards, and two lateral incisions separate the skin of the penis from the glans (*Fig.* 33). The flaps are dissected

Fig. 33.

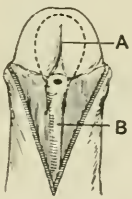


Fig. 34.

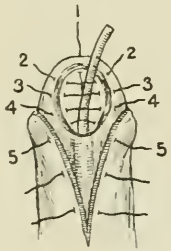


Fig 35.

back, and a flap is also formed from the mucous membrane of the inferior surface of the glans, as broad as possible and about 2 mm. in thickness (*Fig.* 34, A). This, along with the urethra attached at its base (B), is loosened, the glandular furrow deepened, and the sutures applied. A small Nélaton's catheter is introduced into the urethra (*Fig.* 35).

(2,) *Peno-scrotal Hypospadias.*—An operation devised and used by the present writer, suitable for peno-scrotal cases, is as follows: A longitudinal incision is carried from the base of the glans to within a short distance of the urethral orifice B, (*Fig.* 36); through this the bending of the penis in undone, and after straightening the organ, the incision is deepened so as to separate the corpora cavernosa and make a bed for the new urethra. From the proximal end of the incision two diverging incisions pass one to each side of the urethral opening and within a few lines of its margin D. After passing the opening they diverge widely and map out a wide scrotal flap C (*Fig.* 36). This flap is dissected up until it is attached only around the urethral orifice. A catheter is then passed and the flap turned upwards and sutured

over it. The incisions at the borders of the urethral opening are deepened, and the outer lips dissected up for a short distance (*Fig.* 37).

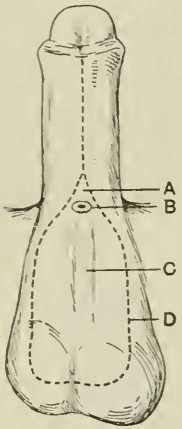


Fig. 36.

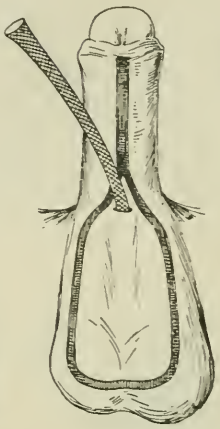


Fig. 37.

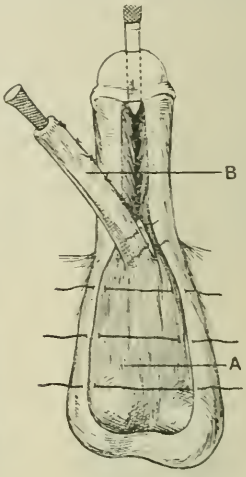


Fig. 38.

The new channel is then laid in position; the glans is tunnelled with a fine knife and the catheter passed through the channel, carrying the new urethra B with it. The sutures are applied as seen in *Figs.* 38 and 39. This method resembles in some of its details that described by Von Reure. The proper straightening of the penis and the separation of the corpora cavernosa are essential to obtaining a good result. Special care is necessary in passing the three sutures at the base of the flap; when this is turned upwards and closed over the catheter a small gap is left in front of its attachment which is closed by suturing to the small triangular flap marked *A* in *Fig.* 36. If this is not carefully done a fistula will almost certainly result at this spot. The best suture material is fine catgut.

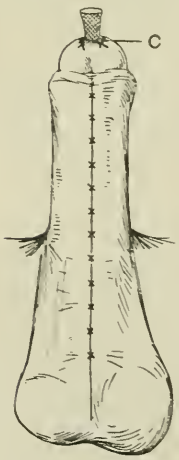


Fig. 39.

(3,) *Perinæo-scrotal Hypospadias.* — In this form a scrotal flap is not available. The procedure suggested by Nové-Josserand and used by Tuffier[5] is suitable; the disadvantage of the operation is

that a fistula is left, to be closed at a second sitting. A knife is carried from the centre of the glans right through the penis, in the line of the septum between the corpora cavernosa, and brought out close to the fistulous opening. An epithelial graft is then cut from a convenient surface, wrapped round an oiled bougie, and fastened to it by a suture at either end. This is then inserted into the tunnel, and any superfluous epithelium cut away; a stitch fastens it to the glans. A catheter is inserted into the bladder through the perineal opening. On the third day the bougie is carefully withdrawn, the urine being still carried away by the catheter. On the tenth day the new urethra is dilated with bougies, and this dilatation is continued. The second stage of the procedure is the closing of the perineal fistula. An oval incision is carried round this; its internal lip is dissected up and sutured transversely with catgut; the external lip is also loosened and sutured with silver wire longitudinally, so that the suture lines cross each other at right angles.

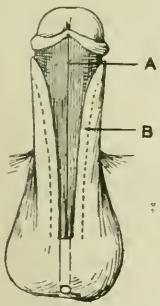


Fig. 40.—*A* Raw surface after straightening urethra. *B* Slips used to form penile urethra.

Russell[6] describes a procedure which he considers specially suitable for marked degrees of the malformation. The penis is first freed by a circular incision just behind the glans; a penile urethra is then formed from the sides of the wound made (*Fig.* 40); the strip B thus obtained is pulled over the glans and through a channel made in the latter with a knife; the incision lines are then sutured (*Fig.* 41.) The second stage consists of suprapubic cystotomy, and closure of the perineal opening. Russell attaches special importance to the accurate definition of the ridge where the urethral mucous membrane merges into the perineal skin, and also incises the skin of the perineum posteriorly in order to expose the hinder margin of the orifice. The bladder drain remains in for fourteen days.

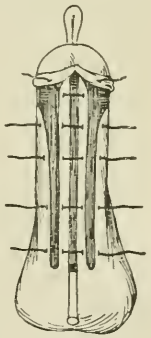


Fig. 41.—Showing method of suturing.

REFERENCES.—[1]*Cent. f. Chir.*, Nov. 5, 1898; [2]*Ibid.*, 1899, p. 4; [3]*Beitr. z. klin. Chir.*, Bd. xxii, Hft. 1; [4]*Cent. f. Chir.*, Sept. 23, 1899; [5]*Ann. des Mal. des Orig. Gén.-Urin.*, April, 1899; [6]*Brit. Med. Jour.*, Nov. 17, 1900.

HYSTERIA. *Græme M. Hammond, M.D., New York.*

Mitchell[1] thinks that many of the graver cases of hysteria and neurasthenia which exhibit nervous instability, combined with physical weakness and with the moral defects of hysteria, react well to the **Rest Cure** when organic disease is absent. The most troublesome symptoms are headache and backache, tenderness of the spine and ovaries, insomnia, and chronic fatigue. Anæmia, loss of appetite, and emaciation are present in varying degrees. The treatment is summarised thus: (*a*,) The patient is placed in a private house away from home, the room being sunshiny and capable of being freely ventilated. (*b*,) The nurse should be young, of agreeable manners, and a stranger to the patient. She should never converse with the patient about symptoms or treatment. She should be able to read aloud. (*c*,) Isolation is most important, and the more distinct the disease is, the more strict the isolation must be. No letters are to be sent or received, no visitors seen, and only the nurse, the physician, the masseur, and the servant are to be allowed to enter the room. (*d*,) In ordinary cases, six or eight weeks of isolation are long enough, after which a single visitor may be allowed. Letters may then be written or received in the way of reward for good conduct. This long isolation is necessary to break up radically the habits of long invalidism. (*e*,) Rest, at first ill-borne and irksome, is well borne after a week. At first the feeding should be done by the nurse and the patient should be overfed. All voluntary movements must be forbidden, except sitting up when the bowels move, etc. A result soon observed is the improvement in the ability to sleep. (*f*,) Diet: milk in small quantities is given every three hours, skimmed, if ordinary milk is not tolerated. On the fifth day a chop or steak is given at mid-day. From the sixth day, bread and butter and eggs are allowed. If milk is badly borne, broth and jellies may be substituted. (*g*,) A separate masseur is desirable. **Massage** should be begun on the third day. At first it should be light, lasting twenty minutes, and increasing daily to deep massage lasting one hour or more. If the patient is obese, long and deep massage is serviceable. A second rubbing of the abdomen and spine by the nurse before sleep is beneficial. At the end of the first week the patient will begin to gain in weight, but if this increases too rapidly the massage should be increased. Oil is not necessary to aid massage. (*h*,) The slowly interrupted faradic current should be applied to the "motor points" all over the body so as to contract each muscle two or three times. This should be applied for three quarters of an hour. (*i*,) Constipation is treated with aloes and strychnine pills,

and for especially refractory cases hot injections of castor oil may be given. (*k*,) Insomnia is diminished by massage before bed time. Hypnotics should be avoided, and the wet pack or abdominal compresses first tried. (*l*,) After the first week the patient is allowed to sit up fifteen minutes, the next day twenty minutes, etc. In a fortnight walking about the room is allowed, after passive movements of the legs have been made. Swedish movements complete the exercises and cure.

Hysterical Hiccough.—Pastena[2] reports two cases of severe hysterical hiccough which were completely cured by **Ether Narcosis.** In one case the symptoms had persisted for twenty days. She was etherized. On recovering consciousness the hiccough had vanished and did not return. The other case had been treated by many methods, including electricity, but without avail. She obtained complete and immediate relief after she recovered from the ether narcosis. Considering the extreme difficulty of successfully treating these cases, and the complete failure which often attend the physician's best efforts, the simplicity of the author's method makes it worthy of further investigation.

REFERENCES.—[1] *Brit Med. Jour.*, Aug. 24, 1901; [2] *Treatment*, Jan., 1901.

IMPETIGO. *Norman Walker, M.D.*

Impetigo was fully dealt with last year by Dr. Colcott Fox. Sabouraud's observations have been confirmed in many quarters, the streptococcus having been found by observers all over the world.

Engmann[1] believes that impetigo varies in different places, Tilbury Fox's variety being commonest in Europe, while bullous impetigo is commonest in St. Louis, from whence he writes. He made cultivations from his cases, and in seven obtained a pure culture of the staphylococcus aureus. In his eighth case the streptococcus was grown. Inoculations were made in three infants, and on his own arm. Bullæ developed similar to the original ones observed, and from these the staphylococcus aureus was again cultivated.

REFERENCES.—[1] *Jour. Cut. Dis.*, April, 1901.

INFANT FEEDING. *Henry Dwight Chapin, M.D., New York.*

G. T. Thomas[1] advises feeding the infants of the poor with *unsterilized* cow's milk. Good, clean, certified dairy milk is selected. This is diluted, and cream and milk sugar then added to bring up the percentage of carbohydrate. The method differs from that usually employed only in the fact that the initial quantity of proteids

is larger, the proportion being progressively decreased. This feature of the modification is the reverse of that usually practised, but the results are excellent. The milk is packed in sterile jars and placed in buckets of ice, in which condition it is delivered to the mothers. The children who use the milk are examined daily, and a staff of visiting attendants see that the directions are carried out properly. Out of 700 infants supplied with this milk, but three died. It is very evident that sterilized milk could produce no better results.

W. Babcock[2] considers the effect of milk upon the gastro-intestinal infections of infants. With regard to the source of the germs which induce gastro-intestinal infections, it is known that milk is ordinarily sterile up to the time it leaves the lacteal ducts, but contamination may immediately occur from the skin of the nipple, the mouth of the nursling, and at times from some disease of the breast which affects the ducts; and in the case of cow's milk, from the milker's hands and milk pails, the dust of the cow-shed and bedding, the containers of the milk, and other causes. When all these possible sources of contamination were excluded artificially, the number of bacteria in a cubic centimetre of milk fell to 530, although in freshly drawn milk under ordinary circumstances it is over 30,000, and in ordinary market milk runs into millions. It is true that most of these micro-organisms are saprophytes, but the pathogenic varieties are often represented. Not only are they recognized by microscopy, but injections of milk are often pathogenic in animal experiments.

Since millions of germs may be swallowed daily without harm, it is evident that some other factor is present when milk causes disease. Extreme youth is such a factor, as the resistance of the young infant is much lower in degree than in older individuals. Lowered vitality from any cause is also a possible factor. In the presence of these conditions harmless saprophytes may become virulent. No single organism is responsible for the ailmentary infections of children, but there is an apparent relationship between the degree or kind of infection and particular bacteria. Thus certain of the latter appear to produce only local irritation, others a higher degree of local mischief with a considerable degree of toxæmia, others again destructive lesions of the mucosa and intense toxæmia.

Henry D. Chapin[3] states that there are two great classes of milks: 1st.—Those that form hard, solid curds with rennet—cow's and goat's milk; 2nd.—Those that form soft, flaky curds with rennet—woman's, mare's, and ass's milk. Diluting with wheat or barley gruel in which the starch has been digested breaks up the

curds. Digested gruel is made by boiling a heaped tablespoonful of flour with a pint of water, cooling, and adding an aqueous solution of diastase, that can be made at home from malted barley grains or from preparations of diastase made for this purpose. The curds of milk with a digested gruel diluent passed through a sieve having 900 meshes to the square inch ; those with water diluent remained on the sieve.

Have milk bottled and cooled at the dairy. Dip off top, 9 to 16 ounces, into a pitcher or bowl. Here fat and proteids are in about the same ratio as in woman's milk. If a siphon is used the sediment goes into the infant's food, and it is difficult to manipulate. Prepare the digested gruel. Make the infant's food one-eighth to one-third of 9 ounces top milk, or one-eighth to two thirds of 16 ounces top milk, the balance digested gruel. Add 1 part sugar to 20 or 25 parts food. Fine adjustments of percentages are not needed by this method, as nearly the same percentage results will be attained with any milk ; rich milk will be diluted more, poor milk less. Each additional ounce removed from milk bottles reduces fat in top milk 5 per cent. to 1 per cent., which cuts down the fat in infant's food $\frac{1}{5}$ to $\frac{1}{3}$ per cent., depending on the dilution. The important point is to procure strictly clean, fresh cow's milk, and then dilute it properly for the infant's capacity and digestion.

G. M. Kober[4] reports 330 outbreaks of infectious diseases spread through the milk supply. The number includes 195 epidemics of typhoid fever, in 148 of which the disease prevailed at the farm or dairy. Of the 99 scarlet fever epidemics, 68 showed cases of malady at the dairy or milk farm. Of the 36 diphtheria outbreaks, 13 showed cases at the dairy. In three instances, employés handled milk while ill with the disease.

White and Ladd[5] advise using **Whey** as a diluent of cream, thus modifying cow's milk so that its proportions of caseinogen and whey proteids will closely correspond to the proportions present in human milk. The best temperature for destroying the rennet enzyme in whey is 65·5° C. Whey or whey mixtures should not be heated above 69·3°, in order to avoid the coagulation of whey proteids. The percentage of the latter obtained by the authors from the whey was 1 per cent. Whey-cream mixtures prepared on this basis were found to contain from ·25 per cent. to ·90 per cent. whey proteids ; caseinogen, ·25 per cent. to 1 per cent. ; fats, 1 per cent. to 4 per cent., and milk-sugar 4 per cent. to 7 per cent. The emulsion of fat in whey, barley-water, gravity-cream, and centrifugal cream mixtures was the same both macro- and microscopically. Hot

weather and transportation combined will partly destroy any emulsion of modified milk; hence the necessity of keeping the milk cool while in transit.

A. Monti[6] states that the acidity of artificial food should be the same as breast milk, and this may be accomplished by adding **Sodium Carbonate.** From experiments made by his assistants, Monti finds 5 grammes of sodium carbonate per litre sufficient to reduce the acidity of cow's milk to that of breast milk; while if the milk is diluted with equal parts of whey, 4 grammes per litre are enough. It is only after the correction of acidity that the addition of rennet can be made to cause cow's milk to coagulate in a way which approaches that process in breast milk. The latter contains less casein and more soluble albumin (lactalbumin and lactoglobin) than does cow's milk, the exact percentages varying with the age of the breast-milk. Diluting with whey does not make the proportion of casein and soluble albumin in cow's milk exactly similar to that in breast milk, but its results are infinitely superior to those obtained by using water as the diluent. The whey also causes greater digestibility of the casein, although the results are not identical with those obtained with human milk.

Centrifuging milk acts unfavourably upon the structure of the fat, and increases the difficulty of its reposition. Whey, being a natural sugar of milk solution, forms the best method with which to equalize the amount of sugar contained in cow's milk with that in breast milk.

Halliburton[7] deprecates the use of borax and formaldehyde as preservatives of milk. Formaldehyde in a percentage of 0·5 rendered gastric digestion almost impossible. In the milk trade the proportion in which formaldehyde is stated to be used is, roughly, two drops of formalin (40 per cent. formaldehyde) per fluid ounce. Such an addition to milk greatly delays rennet action in all cases. These experiments prove conclusively the injurious effects produced by even minute quantities of certain preservatives on the activity of the enzymes concerned in ordinary digestion, and their use should be prohibited in the preservation of food materials. Cold storage is preferable as a preservative.

Prof. Boyce[8] narrates the injurious effects of boric acid (frequently used as a milk preservative), as shown by feeding kittens with milk containing 5 and 10 grains to the pint. In each case diarrhœa, emaciation, and death were caused in a few weeks. Similar, though less violent results, were produced with formalin (1 in 12,500 of milk).

Zahorsky[9] treats of infant feeding in two sections: (1,) Artificial feeding as an adjuvant to nursing. (2,) Human milk as an adjuvant to artificial foods. Under the first head he considers first the usually stated conditions demanding the addition of artificial food—deficiency in the quantity of the mother's milk, and deficiency in solid constituents. When the mother's milk contains an excess of proteids, causing colic and indigestion, he recommends the use of some food containing dextrinized gruel, condensed milk, or some food which contains dextrin, sugar, and starch, to be given immediately before nursing. The artificial food dilutes the breast milk, and the carbohydrates inhibit the decomposition of the proteids. When the human milk causes diarrhœa, whether there is some gastro-enteric infection or the milk possesses decided laxative qualities, a solution of dextrinized gruel administered before nursing acts very well.

Under the second heading he insists upon the value of even a few ounces of human milk in the dietetic management of acute or chronic digestive diseases. For this purpose the milk of a woman who is advanced some months in the period of lactation is to be preferred, since her milk is less liable to prove too rich in solid constituents. The properties of this milk are both nutritive and therapeutic; it is a powerful stimulant to the digestive and absorptive functions of the gastro-enteric tract; it seems also to give strength and tonicity to the vascular system; it supplies antitoxic and bactericidal properties to the blood of the infant which struggles with some infectious process.

References.—[1]*New York Med. and Surg. Jour.*, No. 1136; [2]*Inter. Med: Mag.*, vol. ix, No. 7; [3]*New York Med. Jour.*, vol. lxxii, No. 8; [4]*Amer. Jour. Med. Sci.*, vol. cxxi, No. 5; [5]*Phil. Med. Jour.*, No. 162; [6]*Arch. f. Kind.*, vol. xxxi, Nos. 1, 2; [7]*Brit. Med. Jour.*, No. 2060; [8]*Rep. Thomson-Yates Labor.*, vol. iii, pt. i; [9]*Pediatrics*, March 15, 1901.

INFLUENZA. *R. Hutchison, M.D.*

Crawford[1] observes that the treatment of influenza must be mainly symptomatic, but there are few diseases in which judicious treatment is more beneficial. We know of no specific in a true sense. Quinine has been given with that view, but except in small tonic doses is useless, and adds greatly to the discomfort of the patient during the acute stage. Some of the coal-tar derivatives give marvellous relief from pain during the onset, but if not carefully employed add to the prostration and cardiac weakness. **Phenacetin** as an analgesic and antipyretic is the best and safest of this class of remedies when large doses are required.

European writers have lauded the curative virtues of **Salophen.** Crawford tried this remedy repeatedly, but has been invariably disappointed. In the rheumatic form, where it would be expected to do the most good, it has been found in every way inferior to **Salicylate of Soda.** Small repeated doses of **Calomel,** carried to mild purgation, are beneficial at the beginning of almost all cases. The main indication for treatment, after the relief of suffering, is supportive, from the beginning, to counteract the extreme prostration which sets in almost immediately with the attack. Tonic doses of **Quinine. Iron, and Strychnine** meet this indication better than anything else in a majority of cases. A favorite prescription for adults is a capsule containing :

Quinine	gr. j	Pyrophosphate of Iron	gr. ij
Cinchonidine	gr. j	Strychnine Sulphate	gr. $\frac{1}{10}$

One is given four times a day, or every four hours as indicated. Some cases require special **Nerve and Cardiac Tonics.** A useful prescription in heart weakness is :

Tinct. Strophanthus	gtt. iii	Tinct. Cactus grandiflorus	gtt. 12

Give three to six times in twenty-four hours.

In children, with whom bronchitis is usually the leading feature, **Muriate of Ammonium** with **Ipecac.** in syrup of tolu is a most valuable remedy. Opiates are not often indicated in influenza, excepting morphine with atropine hypodermically to relieve obstinate neuralgic pains, and Dover's powder in some cases of painful cough. The Pharmacopœia is very rich in general and special tonics, and may be drawn upon, but **Bark, Iron, Strychnine, Arsenic,** and **Phosphorus,** represent about all the virtues of this class of restoratives.

In an article in the *Therapeutic Gazette,*[2] the importance of early and complete rest in bed in influenza cases is strongly emphasised. In many instances no other treatment than this advice is really needed, although in many of them it is advisable from the very beginning of the illness to administer some mild **Alkaline Diuretic,** which is perhaps best represented by the following prescription :

R Potassii citratis	℥ij	Aquæ dist.	q.s. ad	℥iv
Spiritus ætheris nitrosi	℥j	M.		

S. : Desertspoonful every four hours.

This prescription will maintain urinary flow, be slightly antipyretic in its influence, will perhaps aid in destroying the toxic materials, and certainly will aid in their elimination by the kidneys; and it cannot be doubted that free diuresis for the purpose of eliminating the impurities of the body is an important part of the treatment of all infectious diseases.

For the muscular and bone pains of influenza, the application of a hot-water bag or hot brick to the part of the body which is in greatest suffering will often be efficacious, and is much better than the administration of coal-tar products, which are apt to encourage cyanosis and nervous depression, and which give the kidneys additional work in elimination. But if these symptoms are marked, **Acetanilide** in what is well known as the migraine tablet, which contains 2 grains of acetanilide, ½ a grain of citrated caffeine, and 1 grain of monobromated camphor, may be administered several times a day; or in its place **Phenacetin** and **Salol**, as these preparations seem to depress the circulation less than some of the other coal-tar combinations.

If an irritable cough, unassociated with distinct bronchial or pulmonary trouble, annoys the patient, doses of **Codeine**, say $\frac{1}{10}$ to $\frac{1}{5}$ of a grain, may be administered several times a day with advantage; and if headache is marked and of a congestive type, with cold in the head and frontal fulness, a **Hot Mustard Foot-bath** repeated several times a day will often give relief, and is a much better method of treatment than the administration of drugs.

In some cases of influenza the heart seems to be considerably depressed by the action of the disease, and it is necessary to administer stimulants. But in the great majority of instances, if the patient will remain flat on his back in bed, the use of stimulants is unnecessary, and if they can be avoided it is best not to administer them. If they are given, moderate doses of the alcoholic stimulants are probably best, particularly if whisky or brandy is administered in the form of hot lemonade, which, while acting as a stimulant to the circulatory system, will also increase the activity of the skin and kidneys in eliminating toxic materials. The fever ought not to be lowered by coal-tar products, but by sponging with tepid water; or, if the temperature is very high, by rubbing of the body with a small piece of ice, using active friction with the other hand, and keeping cold applied to the head so as to avoid cerebral congestion during the operation. Where patients object to the use of cold water or ice, alcohol and water, half and half, may be employed, and in other instances a mixture of equal parts of warm vinegar, warm water, and alcohol may be used with advantage. Sponging with this liquid not only cools the skin but opens the pores, washes off effete materials, soothes the peripheral sensory nerves, and by so doing tends to produce sleep.

Another drug which is of value because of its influence in increasing secretion of the skin, and because it relieves pain in the muscles

and bones, is **Dover's Powder.** But this substance often seems to produce secondary depression in blonde, sanguine persons, and because of the opium it contains, is liable to increase constipation, which should not be encouraged.

REFERENCES.—[1]*Jour. of Amer. Med. Assoc.*, Jan. 27, 1900; [2]March 15, 1901.

Prof. H. P. Loomis, M.D., New York.

Harnsberger[1] states that in his experience **Potassium Bicarbonate,** given early, will, in nearly every instance, abort a cold very effectually and almost at once. The remedy is well borne by both elderly and weak persons. Nor is it necessary for them to keep indoors as after the treatments commonly in use. Even when the case has advanced further and fever is present, this drug, with others indicated, will help greatly to re-establish the normal adjustments of the body. In those cases in which the tonsils are involved or in which the catarrhal inflammation affects the other air-passages, or the alimentary canal, potassium bicarbonate will demonstrate its benign influence. Pneumonia is a less frequent result in such cases, and when it does come on, he finds it runs a much milder and shorter course.

But it is in influenza that Harnsberger particularly speaks of potassium bicarbonate as a remedy of unusual value. He began its use in this disease in the autumn of 1889, and his observations of its beneficial effects through the epidemics of influenza since that year have convinced him that it is a therapeutic agent in which we can place the utmost confidence.

REFERENCE.—[1]*Phil. Med. Jour.*, Nov., 1900.

INFLUENZA IN CHILDREN. *Henry Dwight Chapin, M.D., New York:*

A. Jacobi[1] speaks of the treatment of influenza in children. For protracted vomiting, he advises rectal feeding and the exhibition of half-drop doses of **Majendie's Solution** placed upon the tongue. High temperature without remissions should be combatted. For this purpose he relies upon **Phenacetin** and **Antipyrine.** To antagonize any tendency to heart failure, he prefers caffeine to alcohol, and employs it in the form of the salicylate or **Benzoate of Sodio-caffeine,** by the mouth, or in case of emergencies, hypodermatically, the daily dose being from 3 to 10 grains. **Strychnia** is also used as a synergist. If caffeine causes cerebral excitement, **Camphor** may be substituted, its dose being about one-third of the former remedy.

REFERENCE.—[1]*Med. News*, No. 1457.

INSANITY.

James Shaw, M.D.

Alternating Emotional Aberration.

By this phrase I would indicate the type of case in which there are more or less regular alternations of mild yet morbid exaltation and depression. Such cases are not met with in asylums unless from some adventitious cause, and hardly deserve the name of insanity, as that word is popularly understood. They would, however, for purposes of classification, be placed under the head of circular insanity, that is to say, *folie circulaire* in the wide sense.

The elation or depression may be little more than physiological, and pass unnoticed by the patient's friends. Or the emotional disturbance may be so marked, that some slight circumstance of an exacerbating nature may necessitate temporary resort to asylum treatment.

The depression may pass either gradually or suddenly into the elation, as may the latter into the former. The cycle, of two phases, may be completed in a month, as in cases connected with menstruation, or it may occupy many years. The phases are not always equal to each other in duration or severity, nor is one period of exaltation or depression the exact counterpart of previous corresponding periods.

Although both phases may pass unobserved, the patient's friends generally recognise one of them as morbid, and occasionally the other also. The patient himself never recognises any except one as morbid, *viz.*, the depressed phase.

The disease may commence at any age, but most frequently arises during adolescence, or at the climacteric, on a basis of degeneration. There is nearly always nervous or insane heredity, and degenerative stigmata are seldom absent. Contributory causes are excesses —especially sexual—onanism, over-exertion, and worry.

Whether the disease begins with depression or not, the depressed phase is nearly always the first to be noticed. This depression assumes a stuporous, a stuporo-neurasthenic, or a neurasthenic aspect. In the first-named type, mental circumscription is more prominent than mental pain; in the last the reverse is the case. The stuporous tendency in the first-mentioned does not amount to actual stupor, but the patient is dull, listless, apathetic, devoid of energy, unduly submissive. In the stuporo-neurasthenic cases the power of orientation—of finding one's exact position and the way about—is diminished, there is slight incoherence, and the patient evinces some fear of impending disease—a mild nosophobia.

In the neurasthenic type there is some emotional limitation or circumscription, the patient being apathetic as regards everything unconnected with his morbid thoughts and feelings. There is more pain, mental and bodily, than in the stuporous cases. The patient is despondent, at times tearful, fears he will never get well, but will drift into some serious form of disease and an asylum; suffers from various paræsthesiæ, flushings of the head and upper part of the body, coldness of extremities, headaches, giddiness, indescribable sensations in the head, and above all, a great feeling of weakness of all the limbs, especially the legs.

The exalted phase is marked by unusual activity, a tendency to extravagant expenditure, and a feeling of well-being which induces the patient to think and say that he does not believe he will ever be ill (depressed) again. The mental activity in this phase expends itself in inventions sometimes really of merit, in mechanical or artistic work, in the rearing and training of prize animals, or in daring speculative projects. There is, even in old age, an irresistible tendency to take part in various amusements, and often to seek the companionship of persons of a lower grade. In some cases there is an irritability which leads to quarrels and fights, bringing the subject into conflict with the law, and into situations incompatible with his social position. There is great sexual excitement, with abnormal sexual power, leading to excess, to conjugal infidelity, and sometimes to unnatural acts and incest. In contrast to this, during the depression sexual power is in abeyance.

During the exaltation the senses of sight and hearing are much more acute than during the depression, but the opposite often holds with regard to the sense of smell. In the depressed phase the voice is low and mournful, the speech is slow ; whereas in the stage of elation the former is loud, full, and cheerful, the latter rapid and voluble.

The difference in the physiognomy is also striking. During the depression the patient sits huddled up, or walks slowly with bowed head ; his complexion is pale or muddy, his forehead is wrinkled, his eyes are dull and lustreless, the inner ends of the eyebrows are elevated, the angles of the mouth are drooping. Whilst in elation the same individual walks erect with quick steps ; his brow is smooth, his eyes are bright and full of lustre, the eyebrows have lost their droop, the complexion is fresh and clear, the angles of the mouth are elevated, sometimes markedly so, giving a self-satisfied simper to the face. The mucosæ are much paler during the depressed phase; Ferrari,[1] in asylum cases, found the blood corpuscles less numerous than during exaltation.

The exalted stage is generally regarded by the individual's friends as a long spell of wayward and more or less immoral conduct, associated with cleverness and originality in varying degree. Mere eccentric behaviour, mild simple mania, and mild periodical mania, can only be diagnosed from it by the history.

The depression may be taken for mild stupor, simple melancholia, neurasthenia, or hypochondriasis. Unless it is the first attack of depression, the history, if it can be accurately ascertained, will clear up the diagnosis. Hypochondriasis should not be the declaration unless there is some very definite fixed delusion referring to the patient's health, an ever-present false belief—which the patient defends by argument—as to the actual and not the feared future presence of some disease. Confirmed hypochondriasis is seldom cured, and does not often markedly remit, but in these alternating cases the end of the depressed phase is always looked upon by the patient, and frequently by most of his friends, as the termination of the illness—as recovery in fact. A prognosis of incurability, or of the ultimate need of asylum care, will then be bitterly resented. In the worst exacerbations of severe cases, a gloomy prognosis might even lead to suicide in the absence of proper precautions.

Not only have single phases been known to be cut short, but the disease as a whole often diminishes in severity as time goes on, and is sometimes cured. A confidently hopeful prognosis acts in that direction suggestively, besides ameliorating the patient's distress. The duration of each phase varies exceedingly, but is on the whole longer in these mild cases than in the severe asylum ones. Among the shortest on record is that in a case published by P. MacLulich,[2] each phase—there is no interval—lasting only one day. The patient, though much worse than the usual non-asylum cases, had been treated seven years at home, and at the time of reporting, three years in the private section of the asylum to which she had been removed on the death of her husband.

The longest period of which I have any knowledge is fourteen years. This occurred in the case of the father of two female patients of mine, one of whom is "nervous," and the other, very queer at the best, is subject to attacks of periodical mania requiring asylum care. This man after some business and domestic worry at the age of fifty-five, took to bed, and remained there, eating only bread and milk, taking notice of nothing, and never speaking to anyone except a little to his wife, for fourteen years. At the end of that time he got up just as suddenly and unexpectedly, became very cheerful, talkative, and energetic, not only attending to all business, but joining

with the young people in every sort of amusement, sometimes, as he said, "showing the youngsters how to dance." This he kept up till he was eighty-three, when he suddenly, and without any apparent cause this time, took to bed again. He lived much as he had done during the first period of depression, but died rather suddenly of some intercurrent disease in the second year. Prior to his final few days' illness, no organic disease could be discovered by his doctors in either period of depression.

A case, in which each phase lasted almost exactly five years, was under my care the whole of the third period of depression, except the first few weeks. During this time there were remissions and exacerbations lasting from four days to ten weeks, but averaging about a month, and presenting fluctuations within themselves again. This case was of the neurasthenic type, and the exacerbations were extremely painful, not only to the patient, but to those about him. The acme was marked by visual and especially auditory hallucinations when the patient was half awake in the morning, tearfulness, suicidal thoughts, a feeling of extreme weakness, great fear of complete mental and bodily breakdown, utter hopelessness as to recovery, numberless paræsthesiæ and paralgiæ, and a loquacity, which was irrepressible, anent the patient's own feelings, symptoms, etc.

Although the attack, the phase, itself may not be shortened, the exacerbations in these troublesome cases of the neurasthenic type are considerably modified by certain remedial measures. Among these are: **Ammonium Bromide** gr. x. with **Tincture of Nux Vomica** ℥v gradually increased to ℥xv. and a little **Gentian,** in at least ℥iss of water three times daily half an hour before food; **Syrup of the Hypophosphites** ℥j in a wineglassful of water twice a day after food; **Cold Baths** in the morning, followed by brisk rubbing; **Faradism,** with a plate to the nape of the neck and an electrode containing a warm wet sponge to the motor points of the extremities, for ten minutes to each limb, the current for the arms being much weaker than that for the legs; **Modified Massage,** applied when moistening the skin with the warm saline solution preparatory to using the battery.

The patient should be led away from his egoistical murmurings to talk about any subject, political, professional, athletic, or literary, in which he, when well or in the exalted phase, took an interest. He should be encouraged to keep out of doors as much as possible with little exertion, to join in easy games and amusements, to read aloud, etc. He ought also to have more than the average allowance of **Rest in Bed.** He should have plain, easily digested, nutritious food in abundance,

Suggestion is of great utility in these cases, as well as in those of true neurasthenia. An unhesitatingly favourable prognosis, with a confident administration of remedies, is very helpful to the patient. To tell him that medicine will do him no good and that he must himself throw off the depression, or wait till it goes, is a mistake. The depression is increased thereby, as the patient feels he cannot throw it off, and it is not in the nature of these cases to wait idly for recovery or a change. The patient goes elsewhere for advice, and may even be driven to commit suicide if he meets with several rebuffs of this kind. And as long as he lives he never forgets these rebuffs. In one case, on the other hand, the exit of the depression was palpably hastened by a rough and ready old practitioner, who, to the usual query "Can you cure me, doctor?" replied "I wish I had a cartload like you." The patient, taking his medicine, gained flesh and spirits rapidly. When on the weighing machine a week afterwards, he was asked if he had the same clothes on, he said, "All except my shirt." Whilst doubts and fears are best met by positive assertion, cavillings should be answered by argument. As a rule it is better to attribute the trouble to the "nerves," than to the mind. But I sometimes find it difficult to persuade patients that the disease is entirely physical, or that drugs will attack it, and conversations like the following arise:—"Shall I ever get well, doctor?" "Yes, you certainly will." "How am I to recover when I cannot throw it off?" "By the help of medicinal and other treatment." "Can medicine, which is material, act on the mind?" "Why not, is not whisky material?" "Oh, yes." "Well then, does it not act on the mind?" The patient is, of course, obliged to admit that it does.

The above is a general outline, but each case needs to be treated on its own merits and according to circumstances. **Phosphorus,** given in the form of perles or capsules, acted well in some cases, but in others could not be tolerated owing to the gastric disturbance to which it gave rise. Tabloids of **Cerebrin** had no effect in my cases, but those of **Thyroid**, two daily for a month, procured some little amelioration. The latter would possibly do better if more of them could be given—four tabloids three times a day for a week—and the patient kept in bed under the medical man's immediate supervision, and provided the cases were not too chronic.

Several of the more troublesome symptoms are capable of being relieved. Against the persistent insomnia, **Paraldehyde, Trional,** and **Sulphonal** given occasionally and interchanged, act well. **Liquid Extract of Ergot** in doses of ℥xl to ʒj, three times a day, greatly relieves the head sensations and flushings, but rather increases the

feeling of coldness and numbness of the legs and the polyuria, as well as causing some slight diarrhœa and an appreciable shrinking of the body. Curiously enough, ergot is recommended by one writer as a good suggestive remedy in nervous polyuria. The feelings of weakness, coldness, and numbness are relieved by **Massage, Faradism,** and **Nux Vomica**, the irritability and paralgiæ by **Ammonium Bromide.** Nux vomica given alone, increases the latter symptoms ; a small dose of the bromide corrects this without perceptibly diminishing the good effects of the nux. Although theoretically incompatible with this drug, both physiologically and chemically, I have never seen any bad effects from medium doses of tincture of nux vomica prescribed with small doses of ammonium bromide together, in an ordinary eight-ounce mixture. For large or numerous doses of the nux it would, perhaps, be safer to use a separate mixture or tablets, although there is no visible precipitate on addition to even a strong solution of ammonium bromide. When, on account of extreme irritability, etc., medium doses of bromide are required, a little nux vomica counteracts the depressing effect. It is perhaps worth noting that in some cases, taking gr. xxijss of the ammonium bromide three times daily, the cutaneous sensibility, as tested by the faradic brush, was much blunted, and the knee-jerks lessened or abolished. **Saw-palmetto** relieves the cystic irritability, ardor urinæ, etc., but these symptoms, as in Neftel's[3] remittent melancholia, clear up with the depression. Stuporous and stuporo-neurasthenic cases have been benefited by **Tonic** medicines, especially the hypophosphites and glycerophosphates, with, in some cases, small doses of ammonium bromide. One patient of the stuporo-neurasthenic type claimed to be hypnotisable, and to have been benefited by hypnotism. His last depressed period was very favourably modified. **Thyroid** is worth a trial in these stuporous cases early in the disease. In the melancholy phase of a chronic case of *folie circulaire*, however, Easterbrook[4] found it ineffective. Yet his results were good in other forms of stupor and melancholia.

The periodicity in alternating emotional aberration induced me to try **Quinine** and **Arsenic** in fair doses as anti-periodics ; the former increased the irritability ; the latter gave tone to some extent, and nothing more ; neither was curative. **Mercury** and **Potassium Iodide**, given in cases where there was a suspicion of syphilis, were valueless. Gastric and intestinal antiseptics, *e.g.*, **Naphthaline, Iodoform, Bismuth, Cinnamon, Salol, Borax, Boric Acid, Cajuput, Potassium Chlorate, Sodium Salicylate,** were prescribed with the view of antagonising auto-toxic possibilities. The first two, given together

in pill form, improved the general condition, but did not abort the phase, much less cure the disease. The others were only useful against some of the symptoms. **Sodium Salicylate** cured certain rheumatic complications, but aggravated the disagreeable head sensations and flushings, besides in one case increasing the tendency to matutinal auditory hallucinations.

The patient never seeks treatment during the exalted phase except for some bodily ailment, often venereal. His relatives, however, may require aid in consequence of an exacerbation arising from drink or other cause. **Ammonium Bromide** or **Sodium Bromide**, ℥ss to ℥j two or three times a day, with a like dose of **Tincture of Cannabis Indica**, will calm the patient if he can be got to take any medicine. Easterbrook[5] and Bruce[6] find **Thyroid** useful in aborting the maniacal attacks in *folie circulaire*. Thyroid can be given with the food. To procure quietude speedily at night, a hypodermic injection of gr. $\frac{1}{20}$ to gr. $\frac{1}{10}$ of **Hyoscine Hydrobromide** is the best resource.

Obsessions.

Obsessions are much more frequently met with in private practice than in asylums. Their prognosis and treatment vary with the accompanying symptoms and surrounding circumstances. The best known text-books either ignore them altogether, or deal with them in a desultory way under other names. For these reasons a short account of the phenomena may perhaps be of some use to the practitioner.

Magnan[7] defines an obsession as a mode of cerebral activity in which a word, a thought, or an image, forces itself into consciousness, independently of the will, and without discomfort when physiological, but irresistibly and with much distress when pathological.

Writers are not agreed as to what exactly are, or should be called, obsessions, but practically all besetting words, ideas, mental images, limited emotions, and inciting thoughts, may be regarded as obsessions, whether those phenomena are essential or merely symptomatic, provided they arise in a state of clear consciousness and are not delusions, hallucinations, or illusions.

The patient suffering from obsessions, is usually able to describe his symptoms fairly well. He is quite aware that his besetments are entirely subjective; is capable of being reasoned, temporarily at least, out of his dreads and morbid beliefs; recognises any criminal tendency of the inciting thoughts, and is able to resist their promptings; and finally, is fully alive to the obscenity, blasphemousness, or absurdity of his besetting words or thoughts. The first criterion

in the above sentence excludes hallucinations, except, perhaps, psycho-motor—of which more will be said later on; the second and fourth shut out delusions as now understood; and the third eliminates morbid impulses, properly so-called. But obsessions sometimes develop into delusions, psychical hallucinations, or active and irresistible morbid impulses.

Although laying no claim to be a logical classification, the subdivision of pathological obsessions into verbal, ideational, emotional, inciting, and visional, has been found by the present writer useful in practice and convenient for description. Occasionally an obsession can be referred equally well to either of two of these varieties, or several forms may co-exist.

Verbal Obsessions are those in which isolated words—mostly obscene or blasphemous—constitute the morbid besetment.

Ideational Obsessions—the paræsthesiæ and paralgiæ of the mind—are those in which an idea or belief or a group of these constitutes the morbid besetment. They are exemplified in the following case of a male patient. His father was drunken, restless, and suffered from insomnia. His mother, who was ill-tempered and passionate, became hemiplegic, and died of "softening of the brain." The patient had been addicted to masturbation from his eleventh to his seventeenth year, and had suffered much from seminal emissions. When a boy he was a member of a church choir. At practice and service he began to be inattentive, laughed at times without apparent cause, and was at last compelled to resign. When I first saw him he was thirty-one years of age, married, and had three children. His right hand-grasp was 95, left 75. There was no tremor of face, tongue or hands. There was slight hypermetropia of the right eye, but no anomaly of either fundus. The ears presented some degenerative stigmata, and the face was asymmetrical.

He said that obscene ideas arose in, possessed, and dominated his mind against his will. "In fact," he said, "my thoughts constantly revolve around my penis." This, he said, affected his power of attention, his memory, and his capacity for business. Yet he was able to discharge the routine duties of a public office, and although he was forgetful owing to his self-absorption, his memory, tested in the ordinary way, was not morbidly defective. There were neither hallucinations nor delusions. He said he slept badly and that he was irritable. He talked incessantly about himself to anybody who would listen to him, referring chiefly to the obsessions, which had, at that time, existed at least six years. Then he would find fault with himself for this garrulity and egoism, taking himself specially

to task for exposing his mental state to strangers, and for worrying his fellow-officials with his personal troubles.

Four years afterwards the patient remained unaltered, although every plan of treatment had been tried with him except hypnotism.

A common ideational obsession is the belief or fixed idea (*idée fixe*) of sufferers from neurasthenia and the neurasthenic type of alternating emotional aberration (*q.v.*) that they will never recover. One of the latter, after some preliminary weakness of the legs, followed by restlessness of them, vomited, in consequence as he thought of sexual and alcoholic excess, some brown liquid very suddenly, and was at once struck with the idea that he would never recover. This idea had been present to some extent in previous periods of depression, but was probably accentuated in this by the injudicious suggestion made in the one before it, that if he had another attack he would not get well. Except for a few days during the best remissions, this idea was seldom absent from his mind for five years, yet it disappeared altogether a year and a half ago.

Emotional or Affective Obsessions—phobias—are found in such cases as the last and in true neurasthenia, in the form of nosophobia—the fear that disease, generally mental, impends. They may constitute almost the whole disease in cases of obsessional aberration (rudimentary paranoia). They also occur as symptoms of melancholia and paranoia. Perhaps the most typical and one of the best known of these phobias is agoraphobia—the fear of open spaces—which in some cases if not all is a sort of stammering of locomotion, analogous to stammering in writing, deglutition, or speech, but with much greater intensity and extent of emotion.

One method of the pathogenesis of this symptom (agoraphobia) or syndrome was instanced in the case of a young man of neurotic heredity and constitution, with vaso-motor symptoms as well as stammering writing, etc., who consulted me under the following circumstances. He had been taking a nerve tonic containing strychnine, and had somewhat over-dosed himself. In crossing a broad thoroughfare he suddenly felt a clutching sensation at the back of his neck and a heaviness of his legs, so that he could hardly drag himself across the street. This occurred several times. Passers by noticed him, and it was remarked to him that he looked pale and ill. Finally the fear of being seen to have an attack precipitated one, and so originated a fear of crossing or even walking in the streets at all. The replacement of some of the strychnine by a moderate dose of **Ammonium Bromide**, aided by the suggestions, which he adopted, to go out accompanied for a time, and to carry an umbrella or walking

stick, soon ended the trouble so far as the agoraphobia was concerned. For as soon as the patient began to feel confident that attacks would not come on, they ceased. In a confirmed case the result would hardly have been so good.

Inciting Obsessions are besetting thoughts which prompt, incite, or impel the subject of them to do certain acts, often criminal, or occasionally to refrain from doing things which would be beneficial.

The *prognosis* in cases of confirmed obsessional aberration or single obsession is unfavourable, but it is not so in the early stages, several cases having recovered, sometimes suddenly; *e.g.*, a neurotic young lady into whose head "funny thoughts jumped," was cured immediately by a domestic event.

Whilst obsessions occurring as symptoms of melancholia, paranoia, or general paralysis should, for purposes of prognosis and treatment, be distinguished from those occurring singly or as constituents of obsessional aberration (rudimentary paranoia), they are nevertheless obsessions, just as hallucinations are hallucinations, wherever encountered. The word obsession is useful as indicating a phenomenon which is not a delusion, and yet neither a hallucination nor an illusion. It has its limitations, however, beyond which its use will only tend to confusion. As the French from whom we borrow it have no single word corresponding to our technical term "delusion," and call fixed delusions "fixed ideas" (*idées fixes*), there will be a tendency to include the latter among obsessions, along with some minor phenomena such as are met with in neurasthenia, etc. But for a fixed false belief as to matters of fact (emperors, kings, etc.), the designation "fixed delusion" is incomparably more expressive than "fixed idea." With matters of faith it is different. If a patient has a fixed belief or idea that his soul is lost, how it is to be proved that this is a false belief? Until it is so proved it is only conventionally a delusion, and this statement is not invalidated by the fact, if fact it be, that such fixed idea is peculiar to insanity. If "fixed ideas" as to matters of faith be included among, and fixed false beliefs as to matters of fact excluded from, obsessions, most of the difficulty as to the discrimination of some of the latter from delusions is removed. And when these fixed ideas arise out of other obsessions, it appears to the present writer that they constitute a form of melancholia, *viz.*, obsessional melancholia as distinct as the hypochondriacal variety.

Inciting obsessions seem to be capable of becoming intensified, so as to give rise to the blunder (hallucination) that there is a "voice" in the head. So long as the patient speaks merely of *thoughts*

suddenly arising in his mind, there is no blunder, therefore no hallucination. When he speaks, without any suggestion from the outside, of "loud thoughts," he is well on the way to hallucinations, as thoughts have no sound; when he says he has "voices" in his head, he has arrived (psychical hallucinations). In deciding between obsessions and hallucinations a source of difficulty, besides words being suggested to the patient, is that he is inclined to repudiate homicidal thoughts. True verbal psycho-motor hallucinations are comparatively rare, and few cases have been published. Marie[8] reports three good cases in which the patient either thought he spoke himself against his will, or that others borrowed his voice and spoke through his mouth. Marie refers to another patient whose persecutors made him talk against his will. Sérieux[9] also records a case in which the patient thought she spoke in her own throat and called herself "thief," and another[10] in which the patient heard other people speaking in her mouth. These cases manifestly differ from obsessions.

All inciting obsessions are impulses, in the sense that they impel, but all impulses are not obsessions. Neither sudden isolated impulses due to irascibility, nor those of which the patient is unconscious, should be included among obsessions. If the term "morbid impulse" is used synonymously with "imperative act," as it is by many writers, an obsession is clearly not a morbid impulse until it not only impels but compels.

TREATMENT.—Each case requires to be treated on its merits. Where it can be carried out the application of a weak **Galvanic Current**, transversely through the parietal region, for two minutes daily, is worth a trial. When other means have failed, **Hypnotism** should, if possible, be tried. In private practice this is difficult, the patients objecting to the prolonged and frequent sittings required to make them capable of receiving effective suggestions. Under any circumstances great perseverance is demanded. Agoraphobiacs perhaps excepted, these patients, when hypnotisable at all, are not easily hypnotised, on account of their attention being diverted by the obsessions.

REFERENCES.—[1]*Jour. Ment. Path.*, June, 1901; [2]*Jour. Ment. Sci.*, July, 1899; [3]*Med. Rec.*, June 11, 1898; [4]*Brit. Med. Jour.*, Sept. 22, 1900; [5]*Ibid.*; [6]*Ibid.* and *Edin. Hosp. Reports*, 1900; [7]*Ann. Med. Psych.*, March—Apr., 1896, quoted by V. Bourdin; [8]*Jour. Ment. Path.*, June, 1901; [9]*Ibid.*, July, 1901: [10]*Arch. de Neurol*, 1894.

INTESTINAL OBSTRUCTION. *R. Hutchison, M.D.*

Dr. Batsch[1] of Grossenhain, advocates the use of **Atropine** in some cases of intestinal obstruction. Though in general the treatment of ileus should be surgical and operative intervention early, there are at least some cases in which circumstances compel one to temporize, and others in which infrequent vomiting and the general well-being of the patient make it desirable to wait. It is in such conditions that he advises recourse to subcutaneous injections of atropine, in doses rather beyond those usually employed. He and several colleagues who have followed his example—notably Gebser and Festner of Riesa, and Scheumann of Grossenhain—have obtained good results in grave cases with the aid of subcutaneous injections of atropine, in doses varying from 1 to 5 milligrammes. In some cases a single injection sufficed to produce an evacuation, followed by recovery. In others, the injection resulted only in the escape of flatus and a small quantity of fæces, definite relief only following a second injection the next day.

REFERENCE.—[1] *Abst. in Bull. General de Thérap.*, May 8, 1900.

INTESTINAL PARASITES. *James Cantlie, M.B., F.R.C.S.*

Ascaris lumbricoides.—Maxwell,[1] from experience gained in the Changpoo Valley, Southern China, states that no less than 90 per cent. of the inhabitants appear to be victims of ascarides. The power of resistance of the ova of this parasite is well exemplified from the fact that on a piece of leek taken from the mouth of a small boy, ova were found. Infection is brought about by the consumption of raw vegetables, as these are manured by excreta and refuse from the dwelling houses. The ova are easily detected in the fæces by a $\frac{1}{4}$-inch objective.

TREATMENT.—1 grain of **Santonin** with 1 grain of **Grey Powder,** given twice daily, for some weeks if necessary, is the most satisfactory mode of treatment according to Maxwell.

Liver Abscess due to Ascarides.—J. C. Thomson,[2] in the liver of a child found dead in Hong-kong, discovered round worms in the liver, surrounded by pus. In the hepatic ducts many parasites were found, and the intestines were packed with them; the stomach contained a mass of worms as large as a man's fist.

Ankylostomiasis.—Lieut.-Col. R. N. Campbell,[3] writing on "Ankylostomiasis in the Andamans," divides the cases of anæmia into three classes—those showing: (1,) Anæmia due to malaria; (2,) Anæmia due to ankylostomum duodenale; (3,) Anæmia the result of a combination of the two diseases. Anæmia arising from

ankylostomiasis is associated in the earlier stages with dyspeptic symptoms, in the later stages with œdema, ascites, and dilatation of the heart. Attacks of diarrhœa, or dysentery, or of pneumonia may intervene.

Capt. W. G. Liston,[4] in an article entitled "Ankylostomiasis as a cause of Anæmia and Spongy Gums," points out that the effect of ankylostomiasis may be mistaken for scurvy. The symptoms are anæmia, deficiency of the red corpuscles, swelling of the face, and later of the gums, which readily bleed.

Capt. C. F. Fearnside[5] submitted 678 new arrivals at the gaol at Rujahmundry, India, to systematic search for the ankylostomum duodenale. No less than 68·1 per cent. of those examined were found to be the subjects of ankylostomiasis, and in 105 *post mortem* examinations the worm was found in 74·3 per cent. of the cases. Capt. Fearnside believes that it is chiefly after a serious illness, such as dysentery, that the presence of the ankylostomum may cause a serious state of health. The patient being reduced in strength, cannot afford the loss of blood caused by the intestinal parasites.

TREATMENT.—Thymol failed in many instances to effect a cure, for after dosing for from ten to sixty days with large quantities of thymol, Capt. Fearnside found as many ova of the parasites in the stools as when treatment was first commenced.

W. B. Gray[6] gave a woman, aged twenty-five, the following :—

℞	Oleoresin of Male Fern	♏ xlv	Powdered Gum Acacia	℥ss
	Tinct. Vanillæ	♏ xlv	Distilled Water	℥j

The entire draught was taken, and followed in two hours by an ounce of sulphate of magnesia in water. The action was prompt, and a permanent recovery resulted.

C. W. Daniels[7] gives a table showing the entozoa found in natives in British Central Africa ; these include anchylostomes, lumbrici tricocephalus, anguillula, and bilharzia (rectal). Compared with British Guiana and India, the number of anchylostomes in Central Africa is small. The percentage of infection in these and other countries are as follows : (1,) British Central Africa : Anchylostomes, 10·8 ; lumbrici, 6·5 ; tricocephalus, 3·9 ; anguillula, 1·3 ; bilharzia, 0·43 ; (2,) In British Guiana : (*a*,) *Negroes :* Anchylostomes, 36·5 ; lumbrici, 25·0 ; tricocephalus, 16·0 ; (*b*,) *Indian immigrants :* Anchylostomes, 65·0 ; lumbrici, 21·0 ; tricocephalus, 13·0 ; (3,) In Zanzibar : Anchylostomes, 20·0 ; lumbrici, 22·08 ; tricocephalus, 22·08 ; (4,) In Mombasa, British East Africa : Anchylostomes, 26·06 ; lumbrici, 3·3 ; tricocephalus, 6·6 ; tænia, 6·6.

According to Daniels, anæmia is not a marked feature of intestinal infection by parasites in Central Africa.

Oxyuris Vermicularis.—M. A. Ruffer[8] describes the *post mortem* examination of an Egyptian workman, aged thirty-five, in whom many of these parasites were found in the colon. In the walls of the bowel also tumours varying in size from a pin's head to the size of a small nut were found. These tumours were found to be calcareous, and within them numberless typical eggs of oxyuris vermicularis, in some instances embryos, were seen. No traces of the worms themselves were found inside the cysts. The explanation of this phenomenon, hitherto unrecorded, seems to be that the female oxyuris penetrated the mucous membrane, laid her eggs, and then found her way back into the intestine, or died and was absorbed; the nest of ova acting as an irritant set up an irritation followed by calcification.

REFERENCES.—[1]*Jour. Trop. Med.*, Oct. , 1900; [2]*Ibid.*, May 15, 1901; [3]*Ind. Med. Jour.*, Oct., 1900; [4]*Ibid.*; [5]*Ibid.*; [6]*Virg. Med. Semi-Monthly*, Sept. 27, 1901; [7]*Jour. Trop. Med.*, June 15, 1901; [8]*Brit. Med. Jour.*, Jan. 26, 1901.

INTESTINE (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Simple Duodenal Stricture.—Barling[1] had a case in which the second part of the duodenum was constricted either congenitally or as the result of ulceration. In consequence, the first part of the duodenum was enormously dilated, the stomach was displaced downwards, and the patient was much emaciated. Gastro-jejunostomy was undertaken too late, for the dilated duodenum leaked, caused suppurative peritonitis, and death five days after the operation.

Malignant Duodenal Stricture.—It is an uncommon situation for malignant disease, the most frequent origin being in connection with the bile papilla. The duodenum being divided into three parts, the first and third above and below the bile papilla, and the second including it, it will be seen that the symptoms will differ in each case. Rolleston[2] shows that the primary malignant disease is most often an annular carcinoma narrowing the lumen, and less often lympho-sarcomatous, when a considerable portion of the duodenum may be involved. The symptoms are those of duodenal obstruction, or, if the bile papilla is involved, jaundice and suppurative inflammation of the biliary tract.

Malignant disease of the duodenum above the bile papilla is particularly rare, not only primarily, but it is also notorious that only very rarely does the frequent cancer of the pylorus extend far into the duodenum. Now, simple ulcer of the duodenum is practically

limited to the first part, and it is not unlikely that a long-standing chronic ulcer of the duodenum may become the seat of carcinoma. Perry and Shaw believed that this had taken place in five of their cases. The symptoms of cancer of the first part of the duodenum are practically the same as that of cancer of the pylorus, and it requires a surgical exploration to distinguish them during life. The vomit does not contain bile, and there is not in the early stages any sign of biliary obstruction.

The most frequent origin of duodenal carcinoma is at the bile papilla or in the ampulla of Vater, embryologically a diverticulum from the duodenum. The only distinction in the symptoms is that, whilst cancer of the ampulla has the same symptoms as that of the head of the pancreas, both the biliary and pancreatic ducts being obstructed, so that there is jaundice and distension of the gall-bladder; if the cancer involves the bile papilla the jaundice may be intermittent. There need at first be no sign of duodenal obstruction; this only appears late. A malignant stricture below the bile papilla gives rise to duodenal obstruction with vomit containing bile and trypsin, with rapid wasting, but without jaundice. An interesting case, in which Halsted excised a carcinoma of the ampulla of Vater and the bile papilla, is mentioned under "Liver and Gall-bladder."

Simple Stricture of the Jejunum.—In a case described by Barker,[3] a stricture of the jejunum had followed an injury. The most striking feature was a marked anæmia, which disappeared after an intestinal anastomosis had been established.

Simple Stricture of the Ileo-cæcal Valve.—Obstinate constipation, attended by distension of the small intestines without distension of the colon, was found by Caird[4] and by Mayo[5] to be due to stenosis of the ileo-cæcal valve. The stricture was of the same kind as the simple pyloric stricture, and was relieved by a plastic operation similar to pyloroplasty.

Stricture of the Cæcum.—Typhlitis, *i.e.*, inflammation of the wall of the cæcum, does sometimes occur in spite of what has been said to the contrary, and may lead to stenosis. Gerard Marchant[6] reports three cases in which the cæcum was narrowed by cicatricial tissue, neither tuberculous nor malignant, and a swelling was produced which could be felt externally.

Perforation in Typhoid Fever.—The diagnosis of this complication is sometimes difficult, cases having been explored without any perforation being found. Some think leucocytosis, the white blood-cells being increased to 20,000 per 1 c.mm. or more, a trustworthy sign. Kadjam[7] records one success out of ten operations. Davis[8]

operated on three cases. In one there was peritonitis with effusion, but no perforation; it recovered. Of the two which had really perforated, one recovered and one died. Successful cases are recorded by Mayer[9] and by Malet and Deanesly.[10]

Cushing[11] enumerates thirty-five cases of recovery after operation. Five recoveries out of twelve happened in Osler's wards. He urges an early exploration under cocaine. Those who advise waiting until recovery from the collapse, shut out hope from all cases except when the peritonitis is localised. Failures after operation have no bearing, as, except by operation, death must occur.

REFERENCES.—[1]*Brit. Med. Jour.*, May 11, 1901, i, p. 1135; [2]*Lancet*, 1901, i, p. 1,121; [3]*Ibid*, 1900, ii, p. 164; [4]*Brit. Med. Jour.*, 1901, i, p. 1,619; [5]*Cent. f. Chir.*, 1901, p. 454; [6]*Ibid.*, 1901, p. 55; [7]*Ibid.*, 1900, p. 432; [8]*Therap. Gaz.*, Nov. 15, 1900; [9]*Ibid.*, Oct. 15, 1900; [10]*Lancet*, 1901, i, p. 1,460; [11]*Ann. of Surg.*, May, 1901, p. 544.

INTUSSUSCEPTION IN CHILDREN.

Keith Monsarrat, F.R.C.S.E.

Acute Intussusception.—This accident is much more common during the first than during any other of the years of childhood. Statistics show this very clearly; for example, in Bernard Pitts' table of 106 cases treated at St. Thomas's Hospital, eighty-one were under the year, and their average age was 5·7 months. This table is instructive also from another point of view. The period covered is one of twenty-six years, and of the 106 cases, sixty-two belong to the five years 1896 to 1900 inclusive. This increase in the records during the last few years must either mean that the accident is more common, or that it is more frequently recognised and accurately diagnosed. The second of these possible explanations is by far the more probable.

DIAGNOSIS.—It is well known that of the signs and symptoms characteristically associated with this condition, one or more may often be wanting either entirely or until late; pain, however, is constant, and this always has certain features which attract attention—a sudden onset, in which the infant screams and is doubled up, followed by alternating periods of quiet and recurrent paroxysms. During the first hours the condition may oscillate, and facts which one from time to time is told in the out-patient department, point to the occasional occurrence of spontaneous recovery by early disinvagination. Mothers tell of attacks of sudden paroxysmal pain, accompanied by stools containing blood and mucus; the attack as suddenly disappears, and the child is left with signs of enteritis.

This course of events is not common ; the bowel once fairly gripped cannot as a rule return. The cause is two-fold : the head of the invaginated section becomes swollen to such an extent that return is mechanically impossible, and in the second place the peristaltic efforts of the intussuscipiens are all in the direction onwards.

The characteristic colic of intussusception is a diagnostic sign of the greatest importance, and it is from a recognition of its peculiar features that earlier diagnosis and earlier treatment is to be hoped. The passage of blood and mucus, and the possibility of detecting the invagination by palpation, are important confirmatory signs ; but one or the other, or both, may be absent for many hours, and vomiting and tenesmus are still less certain. In every case of acute colic in infants, therefore, the question of intussusception should be considered, and the examination directed to its possible discovery. The right side of the abdomen should be carefully palpated, and the finger should be passed into the rectum. Within the first few hours a "lump" may be distinguishable to the right of the umbilicus, though not sausage-shaped, because an intussusception is only of this shape when it has made considerable progress along the colon. The finger in the rectum, again, may detect blood there, sometimes some hours before any is passed by the child. One cannot be too clearly aware of the fact that if one waits for the presence of a sausage-shaped tumour, bloody stools, and vomiting before making up one's mind that intussusception is present, in many a case one will have waited too long for any treatment to avail. However, the early diagnosis of acute intussusception is much easier than that of most other forms of intestinal obstruction, and the case in which a definite opinion cannot be formed within the first twenty-four hours is the exception.

Treatment.—In a recent address Edmund Owen[1] said : "I deem it nothing less than a calamity that physicians every now and then managed to chase back an intussuscepted piece of bowel by using an enema!" This expresses a very strong opinion on the comparative value of what are still considered by some, rival methods of treatment—injection and operation. The question must now be asked, "Is injection to be still recommended as a routine plan to be tried in cases of acute intussusception?" In the discussion which took place (at the meeting of the British Medical Association at Cheltenham), Mr. Bernard Pitts said[2] : (1,) Try inflation only when the case is seen within a few hours of onset, and is not of a very acute character. In the majority of hospital cases it is better to open the abdomen at once ; (2,) Inflation may be tried in certain

other cases for the purpose of reducing the main portion of the intussusception and enabling the incision to be made directly over the cæcum. In another part of his paper Mr. Pitts indicates that by inflation he means the introduction of water from a funnel held not more than two feet above the patient. Mr. D'Arcy Power recommended abdominal section, without injection, at the earliest possible moment. Mr. Eccles also advocated immediate laparotomy. Mr. Tubby was of opinion that in all but possibly the earliest cases, that is, those of a very few hours' duration, the patient stood a much better chance if abdominal section was performed at once. Mr. Eve maintained that injection or inflation were very rarely efficacious, that they were not infrequently followed by an illusory or partial reduction, and that they were haphazard, and therefore unscientific. With these opinions the majority of the others who took part in the discussion agreed.

Collier[3] recommends the use of injection under an anæsthetic for the purpose of reducing the tumour to small dimensions, an incision being then made down on to the final nodule.

Meyer,[4] in a discussion on a paper by Erdmann, to be referred to shortly, mentioned three cases on which he had operated, in all of which there was a certain amount of fever and peritonitis due to temporising methods. He considered that in the usual, the ileo-cæcal form of intussusception, the injection of quarts of water would fail to procure reduction.

The use of injection is attended by the following disadvantages :—

(1,) *It is impossible to gauge the amount of pressure* that may be safely employed in any given case. Erdmann,[5] who recommends injection always within twenty-four hours, would use a pressure of three to five feet. Gibson[6] gives as the limit for a two-year-old child, 1 litre at 2½ feet pressure. D'Arcy Power has in the post-mortem room produced rupture of the intestine with an injection of half a litre. It is impossible, except in the earliest cases, to exclude commencing gangrene, as in some this process comes on very early and rapidly. In using injection, therefore, we use an instrument in the dark, without being able to estimate the danger and risk attached to its use.

(2,) *It is rarely successful.* It would seem as if the time-honoured character of this method had blinded some to the teaching of their own records. To refer again to Erdmann's paper, he recommends injection, and yet the results of its use in his three cases in children were as follows : (*a*,) Apparent reduction, recurrence, operation reduction, recovery ; (*b*,) Apparent reduction two hours after

onset, re-appearance and repetition of injection with a like result, final operation after several further attempts by injection, death; (*c*,) Injection within nine hours unsuccessful, operation, recovery. Wiggin has given the mortality of the old routine treatment by injection as 75 per cent.

(3,) The most serious objection of all to placing any reliance on injection, is the fact that it is impossible to ascertain whether the invagination has been successfully reduced or not. Suppose this plan is adopted in a given case, and the swelling which could before be felt disappears, the records show that in the majority of cases this apparent reduction is no reduction at all; the child is sent back to bed, and the surgeon goes home, uncertain in what condition he is leaving his patient. It has been the custom to speak of recurrent invagination; operative experience has shown that this is a very rare eventuality. The cases which were apparently recurrent after injection, were in reality persistent in spite of its use.

Before, however, injection is discarded as a method of treatment, it must be shown that operation has a better record and prospect to offer. Advocates of injection plead for its use, at any rate within the first twenty-four hours after the onset of symptoms. It is this period, however, which is pre-eminently favourable for operation. Bernard Pitts' table, alluded to above, shows a record of thirty-one cases operated on within this time-limit, and sixteen recoveries; of twelve cases in which injection alone was used, nine died. Still more notable is Barker's table[7]: Of nine cases on whom cœliotomy was performed within twenty-four hours, eight recovered; the one child who died had previously had inflation practised.

By grouping together cases from tables furnished by Gibson (*loco. cit.*) (since 1888), Wiggin[8] (since 1889), Barker (1888), Pitts (1888), Eve (1897), we obtain a total of ninety-four cases operated on within twenty-four hours, with a percentage of recoveries of sixty. The record of cases operated on at all periods in these tables, with the addition of D'Arcy Power's table[9] of cases since 1891, gives a total of 374, with 181 recoveries, representing a percentage of 48·2, and a mortality of 51·7. Taking Wiggin's estimate as correct, cœliotomy has a better record than injection to the extent of 23 per cent.

Gibson's table is of value from other points of view. Of 187 cases there were:—

Reducible 126	- -	Recoveries 64%
Irreducible 14	- -	,, 36%
Gangrenous 23	- -	,, 5%

Resection irrespective of method was attended by a mortality of 81 per cent.; the establishment of an artificial anus by one of 83 per cent.

35	Cases	operated	on	on 1st day.	Mortality	37%	Reducible	94%
36	,,	,,	,,	,, 2nd day.	,,	39%	,,	83%
33	,,	,,	,,	,, 3rd day.	,,	61%	,,	61%
15	,,	,,	,,	,, 4th day.	,,	67%	,,	40%

On the 5th and 6th days, operation resulted in a mortality of 73-75%

Operation and reduction, therefore, within the first twenty-four hours afford a prospect of recovery in three-fifths of the cases; after this period the prognosis is graver; but the success of operation in *all* cases has been 23 per cent. greater than that of injection. The records also show that much greater success has followed cœliotomy alone, *than when injection has previously been tried*.

From this short review of the subject it appears to be a proper deduction, that injection should now be discarded as a method of treatment. It would probably have disappeared before were not the terrors of the knife still so acute in the minds of many.

The value of water pressure in *reducing the size* of large intussusceptions has the authority of Collier, Bernard Pitts, and others. This is a very different matter from relying on it as a method of treatment. If, after the child is under the anæsthetic, water administered through a tube and funnel held about two feet above the table will reduce the tumour in size, the subsequent operation thereby is simplified. Cordua[10] recommends the knee-elbow position, but it is simpler to hold the baby up by the legs. The longer the condition has been present, the more dangerous is the use of this internal pressure. It seems reasonable to limit its use to the first forty-eight hours, and if it is not soon successful it must be given up straightway, and cœliotomy proceeded with.

The Operation.—The technique of operation in reducible cases need not be described here. The incision should be, we think, in almost all cases to the right of the middle line. The reason is that the first stages of the reduction are, as a rule, easy. With two fingers in the abdominal cavity the intussusception can be chased backwards until it is reduced to three or four inches; this last nodule must in many cases be brought into the wound, and if the latter is to the left of or in the middle line, this manœuvre will entail in a fat infant a considerable strain on the mesenteric attachments, and a risk of tearing these. During the operation as little exposure of the intestines as possible should be made.

When the intussusception is irreducible, or if the gut is severely

damaged, resection is necessary. Gibson's tables show that the mortality of this procedure is very high, but less than that following the establishment of an artificial anus. The method of resection suggested by A. E. Barker has been before the profession for ten years; Grieg Smith modified it in that he limited the resected bowel to the swollen head of the mass, sutured the intestine after Barker's plan, and attempted reduction of the rest. Oderfeld[11] criticises what he calls the Barker-Rydygier operation; he has found that there are difficulties in applying the sutures satisfactorily, and thinks the danger of injecting the peritoneal cavity during the removal of the excised piece of bowel very great. He leaves the main mass of the intussusception in the distal portion of the intestine. He first applies intestinal clamps at *a a* and *b b* (*Fig.* 42), then ligatures the mesentery, and removes the piece of bowel, *c*. The distal clamp is then loosened, and the invaginatum is pushed and squeezed into

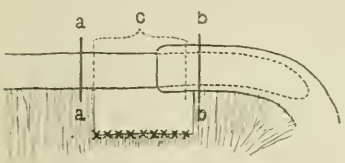


Fig. 42.

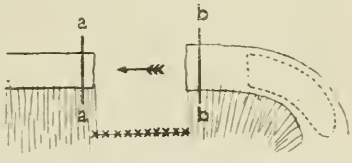


Fig. 43.

the lumen of the invaginans (*Fig.* 43). Oderfeld somewhat exaggerates the difficulties of Barker's operation; however, it cannot be said that much success has hitherto attended this or any other method, and the one described may prove of value.

The necessity for resection is not confined to irreducible cases. When reduced, the *condition* of the bowel must be carefully scrutinised, as in strangulated hernia. Fatal cases of intussusception usually die either from shock within a few hours of operation, or about the fifth or sixth day from peritonitis, the latter having its starting point in the damaged section of bowel. The known high mortality of resection possibly sometimes persuades surgeons to leave bowel, which they would remove if they were dealing with an ordinary strangulated hernia.

Chronic Intussusception.—This is not a common condition in children; it is sometimes attended with extreme latency of symptoms. It would appear that the anatomical variety which favours a chronic course is that in which the apex of the intussusceptum is formed by some part of the cæcum, *i.e.*, the cæco-colic variety; this is by

no means the invariable rule, however. Colman and Kellock[12] have recorded an intususception of the cæcum in a boy of eight years, who for eighteen weeks had daily attacks of pain, frequently but not always accompanied by vomiting; an abdominal tumour could be felt for at least a month before operation, yet there was never at any time any interference with the action of the bowels, nor was there any blood, mucus, or other abnormality discoverable in the motions. The present writer has recorded a case[13] where the invagination concerned primarily the vermiform appendix and the cæcum; there were attacks of paroxysmal pain in the right side of the abdomen for a month before admission, the bowels were frequently freely evacuated by purgatives, and he had no vomiting. In the paper seven similar cases were noticed, in all of which the symptoms were sub-acute or chronic; the reason suggested for this was that as the apex of the intussusceptum was not formed by a portion of the channel along which the intestinal contents must pass, there is no extreme degree of obstruction.

The treatment of chronic intussusception is by abdominal section, and reduction or resection. The prospects of resection are in such cases good. Ludloff[14] has given particulars of six cases; in four resection was carried out, with immediate suture and successful results; in one the general condition did not admit of resection, and an entero-anastomosis was followed by a fatal result; in the sixth case spontaneous disinvagination was followed by an abscess, from which the patient eventually recovered. In the writer's case reduction was easy except that part which concerned the appendix; this was removed, and recovery followed. Pitts mentions three cases; in two the intussusception was excised through an incision in the colon; one recovered and one died within twenty-four hours; in the third there was a complete inversion of the appendix; this was removed through the cæcum, and the child made a good recovery.

This condition simulates some of the features of tubercular adenitis of the mesentery, and of appendicitis. In the former, however, the acute paroxysmal pain is absent, and there is, on the other hand, a gradual wasting accompanied probably by steady diarrhœa; in appendicitis the pain will be less severe, less markedly paroxysmal, and there will be fever and persistent local tenderness. During an attack of appendicitis constipation is the rule; and the condition is quite rare in infants.

REFERENCES.—[1]*Brit. Med. Jour.*, Sept. 7, 1901; [2]*Ibid.*; [3]*Lancet*, Aug. 26, 1899; [4]*Ann. Surg.*, vol. xxxi, p. 180; [5]*Loc. Cit.*; [6]*Arch. Ped.*, Feb., 1900; [7]*Clin. Soc. Trans.*, vol. xxxi, p. 68; [8]*Lancet*,

Aug. 28, 1897 ; [9]*Brit. Med. Jour.*, Sept. 7, 1901 ; [10]*Sep. Abdruck, aus Mitth. a. d. Hamb. Staats Kr.* ; [11]*Cent. f. Chir.*, No. 10, 1899 ; [12]*Clin. Soc. Trans.*, vol. xxxi, p. 227 ; [13]*Liverp. Med. Chir. Jour.*, March, 1901 ; [14]*Gren. z. Geb.*, Bd. iii, Hft. 5.

JAUNDICE (Etiology and Varieties of.) *R. Hutchison, M.D.*

Browicz[1] has brought together the results of investigations in the causation of jaundice. His conclusions are as follows :—

(1,) The origin of jaundice rests on the increased function of normal liver cells, which, irritated by various causes, can take up excessive quantities of nutrient and functionating material, converting these into bile or bile-coloring matter.

(2,) Only a normal, healthy liver cell that can take up an excess of material and convert it into bile, can empty the extra bile into the intercellular biliary canals. From there, partly through cells of the blood-capillaries, the bile reaches the blood.

(3,) Mechanical factors have only a moderate effect on the origin of jaundice, by setting up disturbances of the circulation within the blood-capillaries.

(4,) The blood capillaries of the acini furnish the usual route to the general circulation, the lymphatic vessels in the vicinity of the larger biliary canals being concerned only to a slight degree.

A case of **Emotional Jaundice** has been described by Debove[2] in a clinical lecture. The subject was a woman, employed as a nurse-maid, whose health was perfectly good when she suddenly became jaundiced, this being accompanied by vomiting after each meal, though her appetite was not interfered with, and general health continued satisfactory. The history of the case was that the patient being alone in a room, a strange person mistaking the apartment, opened the door with a key and walked in. The girl thought it was a case of burglary, was considerably startled, and three days later it was noticed she was very jaundiced. She was put on purely milk diet and kept quiet, and at the end of a few days all discoloration had disappeared. Hepatic colic was considered inadmissible, as there was no pain whatever, and taking all the circumstances into consideration, Debove came to the conclusion that a mere catarrhal affection could also be excluded, and that the case was one of not very frequent occurrence, but which must be recognised, namely, emotional. He quoted a case described by Potain of a man who was on the point of being shot during the Commune, when his wife, who was an eye-witness, noticed that he became quite yellow. Another case was recorded of a woman who went to visit her daughter in hospital, and was so startled at her appearance that she fainted,

and half an hour afterwards showed typical jaundice. The history of such cases differed, as in those instances where it appeared rapidly it only seemed to last a few days, but the slower it was in appearing the longer it seemed to take in subsiding.

That jaundice can be produced by a *kinking of the bile duct*, rom traction by a displaced pylorus, provided the upper end of the duct is fixed by adhesions, is proved by a case recorded by Dutton Steele.[3] The patient, a single woman, aged thirty-nine, had a severe abdominal attack, of what might have been hepatic colic, followed by chronic gastro-enteritis. Fourteen months after the onset of symptoms, jaundice developed and steadily increased. She was the subject of gastroptosis, but not of enteroptosis, and, on restoring the stomach to its place by a belt, the jaundice improved and finally disappeared. Gastroptosis alone will not produce jaundice ; experiments on the human subject showed that the bile would still flow into the duodenum when the pylorus was pulled down, and traction then made on the bile duct in the lesser omentum. If, however, the ducts are fixed by adhesions in the portal fissure, a very moderate degree of traction produced by a displaced pylorus may induce kinking of the ducts and jaundice.

At the meeting of the Société Médicale des Hôpitaux of Paris, held on July 6, MM. Pierre Merklen and Janot showed a case of jaundice in which bile pigment was entirely absent from the urine, (*ictere acholurique*), only recently recognised and described by M. Hayem, and characterised by a chamois-leather tint of the skin, analogous to the xanthochromi observed by Besnier in certain cases of xanthoma, and specially marked in the palms and in the folds of flexure of the fingers.

An outbreak of epidemic icterus has been studied by Dr. Achille Franchini.[4] The author observed, during the year 1899, an epidemic of jaundice in the commune of San Leo, affecting by preference the poorer classes, the members of the same family, and persons between the ages of twenty and forty years. The number of cases observed exceeded sixty. At first there was a marked sense of general *malaise*, pain and heaviness in the abdomen, more or less marked anorexia, nausea, and vomiting. Jaundice appeared after four or five days, and was accompanied by changes in the colour of the fæces, urine, etc. The liver was slightly enlarged and tender, the spleen almost always normal. Pruritus was rarely observed. Albumin was found in the urine in one fatal case. An urticarial rash appeared in another. The average duration of the disease was two or three weeks. This epidemic occurred in a mountainous

region which was supplied by excellent water, thus contradicting the statement of Kelsch to the effect that epidemics of jaundice occur in marshy, low places, with foul water supply. No other infectious diseases occurred in connection with this epidemic. These cases must not be confounded with infectious icterus, as described by some authors, in which there are febrile symptoms and swelling of the spleen, and appeared to be due to an undetermined species of the *bacillus icteroides*.

REFERENCES.—[1]*Wien. Klin. Woch.*, No. 35, 1900; [2]*Brit. Med. Jour.*, Epit., April 6, 1901; [3]*Univ. Med. Mag.*, Feb., 1901; [4]*New York Med. Jour.*, April 20, 1901.

KELOID. *Norman Walker, M.D.*

Harris[1] reports a case of hypertrophic scar following an operation for tuberculous glands, which was entirely dissipated by exposure to the **X-rays**. Altogether the patient had thirty-three sittings.

REFERENCE.—[1]*Aust. Med. Gaz.*, April, 1901, p. 133.

KIDNEY (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Treatment of Renal Tension.—The most interesting and difficult subject in renal surgery of the past year was raised by Mr. Reginald Harrison, at the annual meeting of the British Medical Association. In 1896 (see *Annual*, Reni-puncture in albuminuria, 1897, p. 340) Mr. Harrison drew attention to certain cases in which albuminuria of some standing had completely disappeared by a free incision and drainage. He attributed this result to the release of tension exercised by the renal capsule.

In 1901 he carries the question further, and propounds the problem as follows:—

(1), In what class of cases are there reasons for thinking that direct surgical intervention for the relief of tension and its effects is applicable?

(2), What are the indications for interfering?

Mr. Harrison answers the first question by stating that those cases of post-scarlatinal nephritis with delayed convalescence, in which the signs of nephritis (as evidenced by the albuminuria and casts in the urine) do not disappear, are fit subjects for intervention.

He also includes as favourable another class which has been described as the "malignant type of scarlatinal nephritis." Here the kidneys appear to be at once overwhelmed in the pathological changes that supervene, suppression of urine occurs, and death rapidly follows from uræmia, with coma and convulsions.

After death, under these circumstances, it is usual to find the

kidney intensely congested ; the capsule tense and shiny, and overfilled with blood.

Mr. Harrison then adds the indications for operating as follows :

(1,) Progressive signs of kidney deterioration, as shown by the persistence or increase of albumen when it should be diminishing or disappearing from the urine, as in the natural course of inflammatory disorders ending in resolution.

(2,) Suppression of urine or approaching this state.

(3), Where a marked disturbance of the heart and circulatory apparatus arises in the course of inflammatory renal disorders.

It will be remarked that Mr. Harrison's argument is entirely concerned with renal tension induced by inflammation. No part of it is directed against renal tension induced by venous obstruction by twisting of the renal veins, as in movable kidney or thrombosis of the renal vein, probably because this subject has been so amply dealt with by Dr. David Newman.

[*Criticism.*—So important a subject needs discussion and criticism. There is no doubt that section of the renal capsule in selected cases of acute inflammatory swelling commends itself as a common-sense surgical procedure. It raises a hope that destructive fatty change of the secreting cells may thus be avoided, and the future health of the kidney preserved. I have heard the same subject discussed many times twenty years ago, and would gladly acknowledge that the subject had been successfully, safely, and adequately dealt with, only Mr. Harrison's cases do not impress one as being examples of catarrhal nephritis. Casts were only discovered in two out of the five cases. In none is there any notice of dropsy. It is true in two cases "casts" and albumen disappear on section of *one* kidney, but this would point to a one-sided lesion, and it cannot be denied that unilateral nephritic changes are often met with by surgeons, changes which are microscopically indistinguishable from that characterising ordinary scarlatinal nephritis, changes which progress to destruction, and sometimes need nephrectomy. But to satisfy the demands of clinical criticism, a case of recent scarlatinal nephritis with œdema, which is not improving, but retrogressing, should be operated on, both kidneys being incised. If, now, albumen and casts disappear, and if the wounds heal as an aseptic wound should, then the advance is definite, and its importance cannot be exaggerated. But the practitioner should remember that the greater number of cases of scarlatinal nephritis with dropsy tend towards cure, and that the application of the reduction of capsular tension by incision being thus

limited, it is wiser and safer to await further evidence before broaching the subject of operation in cases which fall under the type indicated by Mr. Harrison. As regards operating in suppression, Mr. Harrison does not, I think, make out any case. He adduces one example of partial diminution of urine after bruising, and the scantiness disappeared on relieving the engorged condition of the bruised kidney. This is surely of no clinical import; the same phenomena often take place in fixation of a movable kidney. It does not touch that dangerous and, I believe, *toxic* condition which induces true suppression in advanced nephritis. Nor would it be sufficient, I presume, to divide the capsule of only one kidney—both would need incision. To sum up, I submit :—More renal albuminurias are unilateral than are supposed. Albumin and casts are not infrequently due to torsion of the vessels at the renal hilum by mobility (Dr. David Newman). Such cases are benefited by incision and the consequent fixation. But it is not yet proved that capsular incision is valuable in severe scarlatinal nephritis. The basis for an exact appreciation of the worth of the proposed procedure should consist in cases of scarlatinal nephritis with dropsy, which have been energetically treated for six weeks by the ordinary methods—pilocarpin, diaphoretics, saline purgatives, baths and such like—and yet have not shown signs of amendment, but rather the reverse. Let these be operated on, and reported upon candidly as to the results. Lastly, let a series of complete non-obstructive suppressions be chosen for operation.—EDITOR.]

Experimental injury.—Dolgoff[1] gives the results of a series of experiments conducted with a view to determining the influence of traumatism on the kidney function.

In dogs severe injuries to the kidney, even section of the organ in halves, are not accompanied by danger to life. The preservation of the capsule had an important bearing on the healing of the wound. Approximation of the edges of the capsule materially hastened the process of healing. Dogs bore the removal of the cortical portion of one kidney and half the cortex of the second, but simultaneous removal of the cortical layers of both kidneys resulted in immediate death.

Wounds in the medullary portion of the kidney were always graver in their consequences in dogs than wounds of the cortex. Simultaneous injury to one half of the medulla of both kidneys was fatal. The largest area that could be injured at one time was that covered by two pyramids. If the cortex of one kidney and the

medulla of another were removed, the dogs died slowly of exhaustion. If one kidney was removed, any injury or operation on the cortex or medulla of the remaining kidney resulted fatally.

The renal tissue was very resistant, and had great regenerative powers.

Changes in the urine after palpation of movable kidneys.—Menge[2] made careful observations of the urine before and after manipulation of the kidneys, on twenty-one patients with movable kidneys. In six cases there was no alteration ; in fifteen there was albumin up to ·5 per mille. In all cases the albumin disappeared within twenty-four hours, and once in three-quarters of an hour. There was blood in the urine in five cases, which confirmed this view of the origin of the albumin. The albumin always, however, exceeded the amount proportionate to the blood present. In two cases cubical epithelium was also present. The bladder was examined by the cystoscope in each case, and found healthy.

Catheterisation of the ureters showed that the changes were *only* in the urine from the palpated kidney. In one case there was an increase in the amount of the albumin after palpation of the second kidney. Menge concludes that the appearance and quality of albumin and blood after renal palpation depend on the force and duration of the manipulation, the nutrition of the patient, the tension of the abdominal wall, and the degree of nephroptosis. Basing his remarks upon these observations, he advises against massage of the renal region, and the use of bandages in nephroptosis. At the same time, he admits that the observations are too few to draw absolute conclusions.

[There is no doubt that a transient rise of temperature results from the manipulation of kidneys with tuberculous foci. Also rough manipulation of kidneys which contain large phosphatic calculi in the pelvis with pyelitis is followed by a rise in the temperature, and other symptoms marking toxic absorption through an abraded mucous membrane.—Ed.]

Movable kidney treatment.—The *Therapeutic Gazette*[3] devotes an article to the surgical treatment of movable kidney.

The condition is defined as one in which the kidney " can be distinctly felt on deep inspiration, and which by pressure of the thumb can be prevented from rising upon expiration." In the majority of cases this unnatural mobility of the kidney is simply a sequel to a general relaxation, and in itself occasions no symptoms. In a comparatively small number the mobility is so great that by the direct traction of the organ a distinct stenosing effect is produced,

either upon the duodenum by the right kidney, or the colon by the left, and symptoms of stomach or intestinal obstruction and indigestion develop. When this is the case, some form of treatment must be adopted other than that which has for its object the general toning of the system and the correction of the dyspepsia.

The kidney is maintained in its proper position to a great extent by intra-abdominal pressure, hence the restoration of this pressure is the most important point in palliative treatment. In many cases a carefully fitted abdominal supporter, combined with exercises planned to develop the abdominal muscles, will give entire relief. The application of kidney pads, wedge-shaped with the base upwards, is obviously futile, since it is impossible so to apply the localised pressure through the abdominal wall and contents that it will act efficiently on the kidney. When the wearing of a tight abdominal supporter does not relieve the symptoms, the question of operation may properly be raised.

Statistics show that the best results are obtained by splitting and turning back the proper capsule of the kidney, and securing the kidney substance by sutures to the muscular parietes. The kidney becomes anchored by scar tissue, but sometimes only at its lower pole. The sutures passed through the kidney parenchyma tear out almost immediately, and cure depends not upon these threads, but upon the formation of cicatricial tissue. Five or six weeks' rest in bed in the dorsal decubitus, constitutes a portion of the treatment much more important than the suturing. If this operation succeeds, it makes the kidney a fixed organ when it should really be mobile. Andrews has especially insisted upon this point, and believes that we should endeavour to obtain a cure by an operation which still leaves a small degree of play.

To accomplish this he has devised what he calls the "reefing operation." An incision is made from the twelfth rib to the ilium along the outer border of the quadratus muscle and exposes the peritoneal fat. The fatty capsule is split the whole length of the kidney, and the two flaps thus formed are pulled outside. In cases of great prolapse the fatty capsule will be found drawn into a long tube like a stocking; this should be drawn out of the skin opening. The kidney will now be an inch or more below its normal place, but this is an advantage, as it removes it from the pressure of the liver, and the entire organ is thus held, not merely its lower pole. The segments of the fatty capsule and its enclosing fascia are held by an assistant, while the opening in the muscular wall is closed by mattress stitches transfixing the fatty capsule. The flaps should now be cut

off an inch or two outside the muscle, everted, and stitched down, and the skin wound closed. The immediate results were good in all cases, and one patient had remained well for thirteen months.

Surgical treatment of primary renal tuberculosis.—Otto Ramsay,[4] from a collection of the published cases of operation on primary renal tuberculosis, has arrived at the following conclusions :—

(1,) Surgical treatment in some form is always indicated, and will be palliative or curative, according to the condition of the patient and the extent of the disease.

(2,) Nephrotomy is valuable as a palliative operation for the relief of urgent symptoms, and it may be followed at a later date by nephrectomy.

(3,) Resection of the diseased part of the kidney is contra-indicated in every case of renal tuberculosis.

(4,) Nephrectomy or nephro-ureterectomy is indicated in every case in which tuberculosis is confined to the kidney, or when there is no fatal disease of other organs.

(5,) Tuberculosis of the bladder, or a limited focus in one lung, does not contra-indicate nephrectomy.

(6,) Primary nephrectomy or nephro-ureterectomy performed in suitable cases, results in a final cure in 56 per cent. of cases operated on.

(7,) The improvement in the methods of diagnostic and operative technique may be expected to increase the percentage of final cures.

At a recent meeting of the Société de Chirurgie, Albarran presented a case of early diagnosis and removal of a tuberculous kidney. The patient, a young man of twenty years, complained of slight pain and frequency of micturition. The bladder viewed by the cystoscope was healthy, but catheterisation of the left ureter drew off purulent urine containing the tubercle bacillus. The urine of that side only contained 12 grammes of urea per litre, as compared with 18 grammes from the healthy side. He removed the kidney, and found a small tuberculous cavity near the hilum.

[Compare editor's "Ureteric Meatoscopy" (cystoscopy) in "The Precise Diagnosis of Surgical Renal Disease."

Operative Treatment of Renal Calculus.—Mr. J. Hutchinson[5] voices the general feeling among those surgeons who do not blindly follow surgical fashion, when he asserts that it is neither necessary nor advisable to drag out the kidney on to the loin as a routine method of exploring that organ for calculus. As the personal experience of several cases, he states positively that wounds of the pelvis heal well if only **the urine be kept aseptic** by

urotropin or salol, and no roughness has been employed. He, therefore, urges that the pelvic route should be adopted instead of the cortical. [It might be just criticism to point out that urotropin and salol are not always able to keep the urine sterile, and that pelvic wounds do not always heal well even when the urine is apparently healthy. Every case of calculus is best treated on its own merits, and small stones as a rule are best removed through a pelvic incision, and large through a cortical.]

Mr. Hutchinson considers the skilled use of skiagraphy will now rarely fail to demonstrate both the exact position and the size of any renal or ureteric stone. [This statement may be accepted with this reservation, that small calculi which are able to traverse the ureter are rarely shown in the skiagram. Hence, if a stone is shown, an operation will sooner or later be indicated].

REFERENCES.—[1]*New York Med. Jour.*, Nov. 17, 1900; *Vratch.* Oct. 7, 1900; [2]*Münch. Med. Woch.*, 1900, No. 23; [3]*Ther. Gaz.*, Nov. 15, 1900; [4]*Ann. of Gyn. and Pediat.*, June, 1900; [5]*Br. Med. Jour.*, Oct. 19, 1901.

KNEE JOINT (Disease of). *Priestley Leech, M.D., F.R.C.S.*

Bennett,[1] of St. George's, brings under notice cases of what he calls *Quiet Effusion into the Knee Joint.* The condition is one of passive effusion. It rarely occurs in any other joint save the knee; both knee joints being generally affected, but the effusion is more marked on one side, generally the right. There is rarely any pain unless some injury has been received, and except for a feeling of weakness there is nothing to attract attention. It is limited to girls or women, and is always associated with menstrual trouble or uterine irregularity. It may occur at any period of life, but occurs most frequently at puberty and the menopause. The joint may contain a considerable amount of fluid, but it is never tense unless there be some superadded injury. The fluid, if the patient is standing, sinks to the lower part of the joint cavity, and sometimes leads to a pouch, like overhanging of the synovial membrane at its lower anterior aspect. The patients are usually anæmic. When the uterine trouble is cured, the tendency to effusion also disappears. The treatment must be directed to any menstrual or uterine irregularity present, with moderate exercise, massage, and an out-door life for the general health. Unless there is some pain or recent injury, splints must be avoided. The prognosis is good if the primary cause of the affection can be cured.

REFERENCE.—[1]*Lancet*, p. 527, vol. i, 1901.

LARYNX (Diseases of). *W. Milligan, M.D.*

Laryngeal Nodules.—Garel and Bernand[1] found laryngeal nodules much more frequently in women than in men. Occasionally they followed a subacute or chronic laryngitis, over-straining of the voice, or faulty voice production in singing.

Recent nodes might disappear spontaneously. In chronic cases surgical treatment was necessary. The galvano-cautery might be successfully used, but the authors prefer the forceps. The nodules were at times simple alterations of the mucosa, at other times vascular neo-formations, *e.g.*, fibro-myxomata.

Laryngeal Irritation of Phthisis.—J. Howe Adams[2] advises the internal administration of 20 minim doses of liquid extract of **Ergot** three times daily.

The following inhalation has been recommended (*Int. Med. Mag.*, Nov., 1900) in tuberculous laryngitis :—

℞ Menthol		Tinct. Iodi	āā ℥ij
Ether Sulph.		Tinct. Benzoin Co.	ad ℥ij
Ol. Pini sylvest.			

Sig. Ten drops on an oro-nasal inhaler.

Laryngeal Tuberculosis.—Stanislaus von Stein[3] urges the employment of **Phenosalyl** in laryngeal tuberculosis. The composition of phenosalyl is :—

℞ Carbolic Acid	9 parts	Lactic Acid	2 parts
Salicylic Acid	1 part	Menthol	$\frac{1}{10}$ part

In cases of laryngeal tuberculosis, after its application dysphagia became improved, dry ulcers became clean, and the larynx resumed a rosy red colour. When ulceration was combined with infiltration improvement was very rapid. Bacilli was reduced in all cases except when there was a pulmonary involvement.

Laryngeal Papillomata.—Dicherman[4] remarks : (1,) That in a number of cases papillomata undergo spontaneous cure ; (2,) Intra-laryngeal methods of removal should always be tried first unless dyspnœa is pronounced, when tracheotomy should be performed ; (3,) After tracheotomy, intra-laryngeal methods should be tried ; (4,) Patient should wear a tube for six months after the growth has disappeared ; (5,) Thyrotomy should be considered only as a last resort.

REFERENCES.—[1] *Jour. Laryn.*, Nov., 1900 ; [2] *Med. Times*, Sept. 18, 1899 ; [3] *Klin. Therap. Woch.*, Oct. 28, 1900 ; [4] *Med. Rec.*, Nov., 1900.

LEG (Ulcers of the) (See " Ulcers.")

LEPROSY. *James Cantlie, M.B., F.R.C.S.*

Isolation of Bacillus.—Max Teich[1] claims to have succeeded in cultivating the leprosy bacillus. The organism, isolated, when stained with fuschsine resisted decolourising with acid and alcohol, and exhibited marked polymorphism, appearing either as a thin rod similar to that found in the tissues, or as a thick, oval bacterium. Attempts by Lie[2] to cultivate the bacillus invariably failed.

Inoculation of Animals.—The bacillus of leprosy was found by Lie[3] in lymphatic glands at a distance from the seat of inoculation.

Leprosy in Hawaii[4].—In the report of the lepers at Molokai, it appears there are 909 lepers in the settlement. As an example of how long a leper may live, it is worthy of note that the three oldest patients at the settlement arrived in 1874, 1875, and 1879 respectively. The number of lepers in the Hawaian Islands is diminishing. In 1891 there were 132 admissions, but in 1900 only 85.

Leprosy in France.—Besnier[5] states that leprosy is increasing in France. In Paris fourteen cases are under treatment at the Hospital St. Louis. In Savoy and Brittany there are several endemic centres.

Leprosy in the Canary Islands.[6]—It is officially stated that there are about 200 lepers in the island of Teneriffe. There are fifty patients in the Leper Hospital at Las Palmas, and the other lepers are allowed to wander about freely.

TREATMENT.—Lie's report[7] of the four years 1895-98 in the No. 1 Leprosy Hospital in Bergen, mentions a number of methods of treatment, none, however, with any beneficial results: **Europhen** (5 per cent. oily solution rubbed in the skin); **Airol** (rubbed in as an ointment); **Unna's Oxidised Pyrogallol** (in 5 per cent. solution); Carasquilla's **Serum** (Merck). In no instance was any permanent good apparent. The airol when injected as a 10 per cent. emulsion into the nodules did some good locally, but syncope followed this method of treatment in some instances. Pyrogallol caused gastric symptoms, and Carasquilla's serum caused at times asphyxial attacks. De Moura,[8] of Brazil, has used the venom of the rattlesnake in the treatment of leprosy; it is injected in gradually increasing doses, and simultaneously an antitoxin serum is used. No results have yet been published. Dyer,[9] of New Orleans, recommends Calmette's **Antivenene** in the treatment of leprosy.

REFERENCES.—[1]*Cent. f. Bak.*, xxv, 756; [2]*Lepra*, vol. i, fasc. 1 and 2; [3]*Ibid.*; [4]*Med. Rec.*, Oct., 26, 1901; [5]*Jour. Trop. Med.*, July 15, 1901; [6]*Ibid.*, June 15, 1901; [7]*Lepra*, vol. i, fasc. 1 and 2; [8]*Jour. Trop. Med.*, Oct. 1, 1901; [9]*Ibid.*

LEPROSY. *Norman Walker, M.D.*

Brousse and Vines report a case of nodular leprosy greatly improved by the use of **Chaulmoogra Oil.** The patient took 27 minims daily, internally, and a 20 per cent. ointment was applied.

Douglas Montgomery[1] relates a most interesting case of a native-born American who contracted leprosy either in California or Nevada. Her husband was an Irishman, and had lived only in Ireland, Boston, and in San Francisco. Enquiry into the case discovered the fact, that a man who had acquired leprosy in Hawaii had been for years a lodger in the house.

REFERENCE.—[1] *Lepra*, vol. i, Fasc. 4, 1900, p. 155.

LEUCOCYTOSIS. *T. N. Kelynack, M.D., M.R.C.P.*

The various colourless corpuscles of the blood are conveniently tabulated by Louis Jenner[1] as follows :—

I.	II.	
Hyaline leucocytes.	Granular leucocytes.	
(1,) Small lymphocyte.		
(2,) Large lymphocyte.		
(3,) Large mononuclear cell.	Oxyphil (? neutrophil).	Basophil.
(4,) Transitional cell.		(1,) Mast cell.
	Finely granular.	Coarsely granular.
	(1,) Polymorphonuclear cell.	(1,) Eosinophilous cell.
	(2,) Myelocyte.	(2,) Eosinophilous myelocyte.

By *leucocytosis* is indicated an increase in the number of the colourless corpuscles. It is customary with some to use the term *hyperleucocytosis* as indicating an increase in the number of the leucocytes, and *hypoleucocytosis* as signifying their diminution. *Leucopenia* is also used to indicate a diminution in the number of leucocytes. Two forms of leucocytosis may be recognized : (1,) Physiological and (2,) Pathological.

J. G. Emanuel[2] conveniently arranges them thus : *Physiological leucocytosis* (1,) Leucocytosis of digestion ; (2,) Leucocytosis of newborn ; (3,) Leucocytosis of pregnancy ; (4,) Post-partum leucocytosis ; (5,) Leucocytosis after violent exercise, massage, and cold baths ; (6,) Lastly, leucocytosis also occurs just before death in slow deaths, and may be called terminal leucocytosis. *Pathological leucocytosis* (1,) Post-hæmorrhagic leucocytosis ; (2,) Leucocytosis of infectious processes ; (3,) Leucocytosis of local abscess ; (4,) Toxic leucocytosis ; (5,) Leucocytosis of malignant disease.

Ehrlich has sought to further sub-divide the forms of active hyperleucocytosis as follows : (1,) The polynuclear hyperleucocytosis ;

(*a*,) Polynuclear neutrophilic hyperleucocytosis ; (*b*,) Polynuclear eosinophilic hyperleucocytosis ; (*c*,) The mixed hyperleucocytosis in which the granule-bearing mono-nuclear elements take part—myelæmia. These forms are well described by Simon.[3]

In clinical work pathological leucocytosis is generally found to be due to an increase in the polymorphonuclear cells.

Much discussion has taken place regarding the value and significance of leucocytosis in relation to diagnosis and prognosis. The question of the establishment of leucocytosis by the administration of therapeutic agents or from experimental influences offers matter for much further investigation. Undoubtedly in both medical and surgical practice the clinical value of an estimation of the leucocytes is considerable. It must be remembered that while normally the red corpuscles average 5,000,000 per c.mm., the white corpuscles average 5,000 to 10,000 per c.mm. Even in health there may be great variations in the number of the leucocytes. In the newly-born a count of 30,000 may be obtained ; in the later periods of pregnancy 13,000 to even 18,000 may be found ; after parturition 20,000 to 30,000 is not infrequent, and after meals 13,000 is a count often met with.

But in disease the leucocytosis is often such as to afford considerable clinical assistance. After hæmorrhage the count is commonly as high as 18,000. Leucocytosis accompanies many of the infectious diseases, and is usually conspicuous in pneumonia, diphtheria, scarlet fever, and most of the pyogenic affections. No leucocytosis occurs in uncomplicated cases of typhoid, measles, rotheln, influenza, infective parotitis, malaria, and tuberculosis. In these affections, and from exposures to cold, after prolonged baths, and especially in conditions leading to starvation, hypoleucocytosis (leucopenia) tends to occur.

A recognition of such facts affords material of value in diagnosis. Thus a blood count goes far in distinguishing between typhoid, and pneumonia or septic fevers, scarlet fever and measles and rotheln, and simple tubercular and pyogenic processes. In the recognition of deep seated suppuration it undoubtedly may afford indications of great significance. The absence of any marked degree of leucocytosis in a disease usually associated with such, as for instance pneumonia, may render some prognostic assistance.

G. D. Head[4] has shown how valuable an estimation of the leucocytes may prove in the discrimination of many of the obscure disorders of infancy and childhood. Thus in cases of otitis media and appendicitis marked leucocytosis shows at once that suppuration has occurred. Theodore Dunham[5], Stuart McDonald,[6] Lovell Gulland,[7] Richard

C. Cabot,[8] G. Heaton,[9] J. C. Bloodgood,[10] and others, insist on the value and importance of systematic examination of the blood in surgical cases. Curry[11] has indicated the value of blood examinations in the diagnosis of so-called " camp " fevers, as proving of value to military surgeons, especially in the distinction of malaria and typhoid fever. Jules Courmont and V. Montagard[12] have studied variola and vaccinia in relation to leucocytosis.[13] Sabrazès and Mathis have investigated the condition of the blood in cases of zona. Courmont, of Lyons, at the recent German Congress of Internal Medicine, showed that one of the first signs of rabies was a marked increase of the polynuclear neutrophile leucocytes, reaching even to 85 per cent. He considered such leucocytosis of much value in relation to the early diagnosis of rabies. F. Percival Mackie,[14] from a study of the blood in scarlet fever, finds that while the red corpuscles are reduced, the leucocytes (especially the polymorphonuclear) are increased, and in some the eosinophile cells reached 5 to 6 per cent.

The experiments of A. Bentivegna and F. Carini[15] go to show that the leucocytic mechanism of defence acts against mineral poisons in the same manner as with organic toxins. W. B. Brodie[16] believes that destruction of leucocytes is one of the normal functions of lymphatic glands. J. B. Deaver[17] holds that since the degree of leucocytosis is so dependent on the amount of poison absorbed, and the resistance of the patient, no judgment can be formed as to the character of the infection from the blood count. He concludes: " Let us have blood counts made on our patients; we have already learned valuable lessons from them, and undoubtedly will learn more in the future; but let us not be drawn aside by their still uncertain evidence from the lessons learned by practical experience at the bedside." C. Levaditi[18] shows that in so-called mast cell leucocytosis it is possible to distinguish two kinds of granulation.

Eosinophilia, or an increase of the eosinophilic leucocytes, occurs in bronchial asthma, in association with the presence of intestinal parasites, in cases of trichinosis, and in many diseases of the skin. It also occurs in leukæmia, after the pneumonic crisis, and following acute articular rheumatism and other fevers, in certain cases of malignant growths, and after splenectomy. The per centage of eosinophiles in infancy is greater than that in adults.

REFERENCES.—[1]*Allchin's Manual of Med.*, vol. ii, 1900; [2]*Birm. Med. Rev.*, June, 1901; [3]*Man. Clin. Diag.*, 3rd edit., 1900; [4]*Pediatrics*, New York, Feb. 1, 1900; [5]*Ann. of Surg.*, June, 1900; [6]*Birm. Med. Rev.*, April, 1900; [7]*Scot. Med. Jour.*, Feb., 1900;

[8]*Inter. Text-Book of Surg.*, vol. i ; [9]*Med. Mag.*, Aug., 1901 ; [10]*Amer. Med.*, May 18, 1901 ; [11]*Boston Med. and Surg. Jour.*, Nov. 23, 1899 ; [12]*Jour. de Phys. et Path. Gen.*, July and Sept., 1900 ; Jan., 1901 ; [13]*Rev. de Méd.*, March, 1901 ; [14]*Lancet*, Aug. 24, 1901 ; [15]*Lo Sperimentale*, vol. 54, No. 8 ; [16]*Jour. Anat. and Phys.*, Jan., 1901 ; [17]*Philad. Med. Jour.*, June 1, 1901 ; [18]*Jour. de Phys. et Path. Gen.*, May 15, 1901.

LEUKÆMIA. *T. N. Kelynack, M.D., M.R.C.P.*

In spite of much work devoted to the study of the blood conditions in leucocythæmia, its pathology still remains obscure. L. Riess[1] furnishes a valuable summary of recent work on leukæmia and other anæmic states. The chief features of the blood have been well indicated by J. G. Emanuel[2] :

Average blood-count in a case of Spleno-medullary Leukæmia or Myelocytæmia.
- R. B. Cps., 3,000,000.
- W. Cps., 450,000 —
  - Poly. Neuts, 45 per cent.
  - Myelocytes, 35 ,,
  - Lymphocytes, 10 ,,
  - Eosinophiles, 5 ,,
  - Mast Cells, 5 ,,
- Hæmoglobin, 50 per cent.

W. Cps. : R. B. Cps. = 1 : 7, instead of 1 : 750 in normal blood

Average blood-count in chronic cases of Lymphatic Leukæmia.
- R. Cps., 3,000,000.
- W. Cps., 100,000 —
  - Lymphocytes, 95 per cent.
  - Poly. Neuts, 4 per cent., *i.e.*, as rare as Eosinophiles in normal blood.
  - Eosinophiles, Myelocytes } 1 per cent.
- Hæmoglobin, 40 per cent.

W. Cps. : R. B. Cps. = 1 : 30, instead of 1 : 7, in myelogenic leukæmia.

J. H. Bryant[3] has also recently summarised the chief clinical features of leukæmia. A. E. Taylor has also published an important monograph[4] which would seem to favour the view that leukæmia is due to some infective agent, and is not a condition allied to neoplasms. Löwit attempted to show that protozoa were present in leukæmia, but W. Türk[5] and others believe them to be merely artefacts or products of cell degeneration.

Two forms of leukæmia are well recognized : (1,) The spleno-medullary form, and (2,) The lymphatic form. Transitional and mixed forms are occasionally met with. Many, however, hold that these so-called varieties are quite separate conditions, having a distinct pathology and probably a different etiology ; and for the first the term *myelæmia* is proposed, and for the second *lymphæmia*. The acute forms as described by Rose Bradford and Batty Shaw,[6]

Percy Kidd,[7] M. H. Spencer,[8] and others, usually present blood changes, best indicated by the term *lymphocythæmia*.

C. T. Samman[9] records an acute case which ended fatally in a fortnight. Thomas McCrae[10] in recording a fresh case of acute leukæmia in childhood, summarises the cases already recorded, and gives useful references. H. Reimann[11] has met with an acute case in a girl of nine. W. N. Bradley[12] reports a fatal case in a boy of eight, which ran its course in eight weeks.

Percy Kidd[13] in discussing the present position of the pathology of leucocythæmia, refers to the pathological chemistry of the condition, and shows that while the fibrin is increased the coagulability of the blood is diminished. The xanthine bases are increased, and certain organic acids—lactic, succinic, and formic, have been found in the blood. Charcot's crystals are commonly found *post mortem* in the blood, and also in the spleen and bone marrow. Uric acid is not noticeably increased in the blood, but large quantities are excreted in the urine. The increased formation of the xanthine bases, and of uric acid, has been attributed by Kossel and Horbaczewski to regressive changes in the leucocytes. Minkowski[14] seems to think that too much importance has been given to the varying morphological characters of the blood, while chemical investigations have to a great extent been neglected.

G. Phear[15] records a case where *post mortem* the thymus gland was found to be persistent, all the lymphatic glands, the tonsils, spleen, and intestinal lymphoid follicles enlarged, and where also in the bone-marrow, cells occurred resembling the large lymphocytes of the blood. G. W. H. Tawse[16] records a case where after a course of over three years the spleen was found at the autopsy to weigh 15 lbs. 6 ozs., and was 22 inches long.

G. Dock[17] reports the results of an investigation of fifteen cases of chronic leukæmia. A. Sturmdorf[18] has recorded a case of spleno-medullary leukæmia associated with pulmonary, laryngeal and faucial tuberculosis. H. L. Elsner and W. A. Groat[19] describe a case of splenic-myelogenous leukæmia associated with pulmonary tuberculosis, and review the literature of the subject. Nabarro[20] has reported a case of spleno-medullary leucocythæmia following an attack of malarial fever. E. Körmöczi[21] records a case of leukæmia in which suppuration occurred in the antrum of Highmore. F. W. Mott has recorded a case of spleno-medullary leukæmia where hæmorrhage into the cochlea and semi-circular canals occurred, and led to deafness and loss of balance.[22] E. Parkes Weber has also met with acute Ménière's symptoms in spleno-medullary leucocythæmia,

and gives references to the most important papers on leucocythæmic affections of the ear.[23] E. Kreibich[24] has met with leukæmic infiltrations of the skin in a case of lymphatic leucocythæmia.

R. Saundby[25] after recording several cases, reviews our present knowledge of the affection, and in discussing the treatment states that it should aim at placing the patient under the most favourable hygienic conditions, and free from all sources of worry or mental emotion. **Arsenic** should be given in small doses gradually increased, and a course of arsenical waters at La Bourboule in France may be advised. **Cold Douches** with the **Galvanic and Faradic Currents** may possibly be useful. **Quinine and Iron** are often employed, and **Oxygen** inhalations may be tried. **Splenectomy** is hardly advisable. **Transfusion** appears to be useless. Ewart has recommended the inhalation of **Carbonic Acid** gas, but his favourable review has not been confirmed. The enlarged spleen may be supported by a bandage or belt, and the stomach troubles relieved by the administration of small doses of dilute mineral acids after meals.

W. Murrell and W. Spencer[26] report a remarkable case of lymphatic leukæmia treated surgically, by the establishment of a collateral circulation.

T. McCrae[27] in describing a case of spleno-myelogenous leukæmia in which under **Arsenic** the blood returned to its normal characters twice during a space of less than twelve months, shows that certain conditions, such as typhoid, influenza, erysipelas, septic infection, etc., may lead to such alterations that the specific blood features of leukæmia may be absent.

Charles Heaton[28] has found remarkable tolerance of arsenic when administered by hypodermic injection in a case of spleno-medullary leukæmia.

Ewing[29] gives a very complete and conveniently-arranged summary of our present knowledge of the pathology of leukæmia and pseudo-leukæmia.

REFERENCES.—[1]*Virch. Jahrb.*, xxxv, 1901 ; [2]*Birm. Med. Rev.*, June, 1901 ; [3]*Guy's Hosp. Gaz.*, Jan. 20, 1900 ; [4]*Pepper Lab. of Clin. Med. Phila.*, 1900 ; [5]*Wien. klin. Woch.*, March 29, 1900 ; [6]*Med. Chir. Trans.*, 1898 ; [7]*Clin. Jour.*, July 11, 1900 ; [8]*Lancet*, March 31, 1900 ; [9]*Brit. Med. Jour.*, 1901 ; [10]*Johns Hopkins Hosp. Bull.*, May, 1900 ; [11]*Wien. klin. Woch.*, September 28, 1899 ; [12]*New York Med. Jour.*, Dec. 23, 1899 ; [13]*Clin. Jour.*, July 4, and 11, 1900 ; [14]*Deut. Med. Woch.*, Sept. 14, 1899 ; [15]*Med. Chir. Soc. Trans.*, Lond., 1901 ; [16]*Brit. Med. Jour.*, 1901 ; [17]*Phila. Med. Jour.*, March 31, 1900 ; [18]*Amer. Jour. Med. Sci.*, Aug., 1901 ; [19]*Ibid.*, March, 1901 ; [20]*Clin. Soc. Trans.*, Lond.,

1901 ; [21]*Deut. Med. Woch.*, Nov. 23, 1899 ; [22]*Med. Chir. Trans.*, Lond., 1900 ; [23]*Ibid.* ; [24]*Arch. Derm. u. Syph.*, bd. xlvii ; [25]*Brit. Med. Jour.*, Jan. 5, 1901 ; [26]*Lancet*, June 16, 1900 ; [27]*Brit. Med. Jour.*, March 31, 1900 ; [28]*Lancet*, Jan. 26, 1901 ; [29]*Clinical Pathology of the Blood*, 1001.

LICHEN PLANUS. *Norman Walker, M.D.*

Lusk[1] writes enthusiastically of the treatment of this disease by **Mercury.** He had such good results in so many consecutive cases that he is convinced that lichen is really a syphilide.

Johnston[2] agrees with the observation, but disagrees with the conclusion drawn.

REFERENCES.—[1]*Jour. Cut. Dis.*, May, 1901 ; [2]*Ibid.*, Oct., 1901.

LIP Carcinoma of. (See "Cancer."

LIVER ABSCESS. *James Cantlie, M.B., F.R.C.S.*

Cantlie,[1] at the meeting of the British Medical Association, reported four cases of liver abscess treated during the previous twelve months by the trocar and cannula. The four cases completed a series of twenty-eight cases treated by him in this manner, with twenty-four recoveries. Of the four fatal cases, two were the first two he treated, and he ascribes the deaths to inexperience ; the third he only operated upon, and did not treat subsequently ; in the fourth case the abscess was only opened to give relief in a case in which the patient was collapsed. The four cases were all intra-hepatic abscesses, and all had had dysentery previously. He claims tapping by the trocar and cannula and the introduction of a large tube and syphon drainage to be the readiest, the safest, and the most efficient operation for deep-seated abscesses of the liver. He condemned laparotomy and trans-thoracic incisions as being over-heroic and quite uncalled for. Cutting operations might be undertaken justifiably in well-appointed hospitals ; but in the case of a medical man isolated from his medical brethren, when the operator was single-handed and without all the appliances necessary for thorough aseptism, many lives were sacrificed by hesitancy in operating for pus in the liver, and any method which favoured early exploration was to be welcomed. He stated : (1) That early exploration when a liver abscess is *suspected* is a maxim in practice which must never be departed from ; (2) Never explore the liver for pus unless the instruments are at hand to complete the operation there and then should pus be found ; (3) Always draw off a few ounces of blood by the exploration syringe or aspirator whilst searching for pus ; in the event of the symptoms being due

to hepatitis merely, the withdrawal of blood will do good ; (4) The liver may be punctured in many places without deleterious effects ; on occasions, he has passed the needle as many as nine times into a liver at a single sitting, and as many as thirteen times into a liver within eight days whilst searching for pus ; (5) Wherever dulness is present in the liver area, then may the liver be punctured irrespective of whether the pleura or even the base of the lung is traversed ; should the lung be pierced by the exploratory needle, blood may be coughed up with apparent relief to the local symptoms ; (6) The danger of hæmorrhage from the liver is prevented if care is taken to avoid puncturing the inferior vena cava. This can be guarded against by not penetrating more deeply than 3½ inches from the surface of the body in a medium-sized chest (32 inches).

REFERENCE.—[1] *Brit. Med. Jour.*, Sept. 14, 1901.

LIVER AND GALL-BLADDER (Surgery of).

Walter G. Spencer, M.S., M.B., F.R.C.S.

Recurrence of Gall-stones after Operation.—Kehr[1] has operated four hundred and ninety-one times with a mortality of 3·4 per cent., but has not seen a single instance of true recurrence. In nineteen cases he left stones behind. Owing to inflammatory attacks following cystotomy, due to adhesions, he has to a great extent replaced this operation by cystectomy.

Gall-bladder Infection in the course of Typhoid Fever.—Marsden[2] gives a *résumé* of the observations made on this subject. He favours the view that the bacillus arrives by the blood through the liver rather than by direct ascent through the duodenum and gall-duct. Not only may the typhoid bacillus be found, but there may be also an infection by other forms of the colon bacillus. An acute empyema with ulceration and perforation may arise, which, if not treated by early cystostomy, sets up general peritonitis. In Marsden's case the contents of the gall-bladder spread down by the kidney pouch to the right inguinal fossa, and gave rise to the diagnosis of intestinal perforation. Bile and muco-pus, uncontaminated with fæces, were liberated by an iliac incision, and *post mortem* the gall bladder was found empty, its wall thickened and pitted on its mucous surface with small ulcers. The largest, ¾ inch in diameter at the tip of the fundus, had its base formed only by peritoneum, and in the centre of this was the perforation. The cholecystitis set up by the typhoid fever, when it runs a less acute course, may subsequently cause cholelithiasis.

Resection of the Liver.—Success may be obtained in selected cases.

Fillipini[3] reports the case of a woman, aged twenty-two, with a cavernous angioma of the left lobe of the liver, the size of an adult head. Through a median incision the coronary and falciform ligaments were tied and cut, then the tumour was drawn out, the pedicle controlled by an elastic ligature, the tumour cut away, the bleeding stopped, and the pedicle returned. There was a good recovery. A man, sixty-two, had primary cancer of the liver; the left lobe was brought through the abdominal wound and removed forty-eight hours later. He recovered, to die shortly after with growths in the right lobe and other organs.

Liver Abscess.—There continues a differenec of practice, some following Manson, using the trocar and cannula, through which a drain tube is passed as most applicable to exhausted subjects, others exposing the liver freely and opening with the cautery. To the latter belongs Smits,[4] who, in the course of eight years in Batavia, has operated upon twenty-one cases with eighteen recoveries and three deaths. He deems it most important to establish an early diagnosis by aseptic exploratory puncture, repeated until the abscess is found or until convinced that no pus is present. The affected portion of the liver is then freely exposed, either by an abdominal incision or by the transpleural operation with resection of one or two ribs. The wound is packed with gauze until adhesions are established, and then the abscess opened with the cautery; or, if it is necessary to complete the operation at once, careful suturing will prevent the escape of pus into the pleural or abdominal cavity.

These differences in practice were illustrated at the British Medical Association Meeting at Cheltenham. Cantlie[5] had employed Manson's trocar and drainage method in twenty-eight cases with twenty-four recoveries He believed that only when the inferior vena-cava was punctured did severe hæmorrhage arise, and this was to be avoided by not penetrating further than 4 inches. Manson supported Cantlie. Freyer and Jordan of Hong-Kong, opposed this, and favoured the open method, as did Battye, who reported several cases of severe hæmorrhage following deep punctures.

Cassuto[6] describes an abscess in the liver following typhoid fever.

Ascites (Surgical Treatment).—In continuation of the history of Murrell's patient,[7] after remaining well for most of a year, she relapsed and returned to the hospital very anæmic, with marked leucocythæmia, and distended with fluid in spaces partly shut off by the adhesion. Large veins were to be seen along the abdominal wall, so that in making a small opening to insert a drain in the region of the spleen, the abdominal wall bled as if a venous nævus were

being incised. After death the liver was in the condition of atrophic cirrhosis, and the spleen hypertrophic, but no further light was thrown upon the nature of the disease. In another patient, who had been repeatedly tapped, the liver appeared cirrhotic, but none of the common causes of cirrhosis seemed to have existed. The fixation of the omentum in the epigastric wound, along with the scrubbing of the parietal peritoneum and surface of the liver, was followed by an arrest of the rapid formation of fluid. The patient left the hospital in much better health, and only a very small amount of fluid in the peritoneal cavity. Veins could be seen enlarging.

Some operators do not seem to have very wisely selected their cases, *e.g.*, late cases of atrophic cirrhosis of the liver or of general dropsy with extensive renal disease; hence deaths have followed. The method offers a means of checking the rapid re-accumulation of fluid, and gives the patient time to improve in health. It will doubtless, have the indirect effect of turning attention to obscure causes of ascites. It is a pity that the operation should be employed indiscriminately for advanced cases, and it is not surprising that some deaths have followed an operation which in picked cases need not be attended by any mortality at all.[8]

REFERENCES.—[1]*Therap. Gaz.*, July 15, 1900, p. 475; [2]*Med. Chron.*, Jan., 1901; [3]*Brit. Med. Jour.*, 1901, ii, Epit 22; [4]*Ibid.*, Feb. 2, 1901, i, Epit. p. 17; [5]*Ibid.*, 1901, ii, p. 312; [6]*Ibid.*, 1901, i, Epit. p. 49; [7]*Med. Ann.*, 1897, p. 127; 1901, p. 137; [8]Packard and Conte, *Amer. Jour. Med. Sci.*, March, 1901.

LOCOMOTOR ATAXIA. *Græme M. Hammond, M.D., New York.*

Negro[1] has used **Santonin** (santonic acid) with great success in relieving the pain of tabes. Of the eleven cases in which the drug was tried, eight were decidedly relieved, two were temporarily relieved, and one was unaffected. At first he gave 5 grains at intervals of three hours until three doses had been given. In subsequent attacks he began with a dose of 10 grains, and five hours later gave 5 grains more. The pains were decidedly better in three hours after the first dose, and ceased entirely in two hours after the second dose. So far he has only administered it during a crisis, not in the interval. None of the patients required this treatment more than four or five times in the course of two or three months.

REFERENCE.—[1]*Brit. Med. Jour.*, May 18, 1901.

LUMBAGO. *Græme M. Hammond, M.D., New York.*

Sutherland[1] reports that immediate relief from the pain of lumbago can be secured by the simple and almost painless procedure of acupuncture. He pinches up a fold of the skin immediately over

the point of pain and pierces it through and through with a needle which is allowed to remain in place for from three to twenty minutes. The relief, which he considers due to irritation of the nerve terminals and a modification of the circulation, lasts about ten hours.

REFERENCE.—[1] *Therap. Gaz.*, Feb. 15, 1901.

LUPUS ERYTHEMATOSUS. *Norman Walker, M.D.*

Fordyce and Holder[1] have a further paper on this subject founded on the examination, clinical and histological, of a number of cases; Holder, who writes the histological part of the paper, having prepared nearly 1,000 sections. He found that embedding in paraffin, with serial arrangement of the sections, gave better results than the celloidin process. He divide the changes into:—

(*a*,) Round cell infiltration.

(*b*,) A peculiar degenerative condition of the connective tissue.

(*c*,) Secondary atrophy.

The round cell infiltration is best seen in young lesions. It is distinctly peri-vascular. Capillaries, though surrounded by the cells, show no sign of endothelial preproliferation. At the early stage there is no tendency to involve the capillaries of the hair follicles or glands. There is no evidence of a tuberculous nature in this process.

In the connective tissue changes the nearest approach to a pathognomonic sign is found. It is confined to small areas in the upper corium, the collagenous tissue looking gray and swollen, and not staining with the usual dyes. With Unna's acid orcein it stains a clear brown, but Holder does not agree with Unna that this signifies the presence of elastin, for the other elastin methods leave it uncoloured. From the examination of older lesions he concludes that this substance is gradually forced up towards the surface, and disappears.

The atrophy affects all the structures. At the early stage there is little affection of the epidermis. He frequently found more or less dilatation of the coils of the sweat glands, and on following out the ducts of dilated coils he found large plugs in them.

He has frequently found thrombosis as described by Leloir, but it was impossible to identify endarteritis. He suggests that the disease reaches the vascular stage of an acute inflammation and remains there. Prof. Dunham, to whom he showed his sections, said that he had seen similar vascular changes in interstitial nephritis, and he is inclined to look to the vascular system for the explanation of the disease. He was unable to demonstrate any fibrin.

Only two conditions appear to have antecedent relations with the disease. One of these is a local injury, such as frost-bite, and the second is tuberculosis. In some of their cases there was definite tuberculosis, but on the most liberal interpretation they reached no such percentage as the French school. His crisp American remark that "if anything is absolutely known about lupus erythematosus, it is that Koch's bacillus is not present in its region and that the disease is not tuberculosis of the skin," may be recommended for consideration on this side of the Atlantic, and especially on the other side of the English Channel.

Roth,[2] after a careful study of many published cases, concludes that the affection must be regarded as of tuberculous origin, while Rona[3] inclines to the other view. He describes three cases occurring in sisters, in only one of whom doubtful evidence of tuberculosis was present. In fifty-three cases he found that in twenty-five he could elicit a vague history of tuberculosis in the family. He has never seen lupus erythematosus and lupus vulgaris in the same patient.

TREATMENT.—Hall[4] recommends Hebra's treatment of the frequent application of **Strong Alcohol.** He adds a little **Menthol** to it. Lawrence recommends **Scarification and Pressure.** He scarifies the part freely, and then applies indiarubber pads for several days. He says that unless followed by pressure scarification is useless. [This, however, is not the general experience. Many cases are recorded where scarification alone has been followed by good results.—N. W.] The **X-rays** have been tried in this as in so many other diseases more or less suitable. While experiments may or may not be justifiable in some diseases, no one should apply them in this unless he is thoroughly familiar both with the disease and the action of the rays. Often one exposure of five minutes' duration will set up an intense reactionary dermatitis, and a great deal of harm may result. On the other hand, in quite a number of cases the reaction is beneficial, and considerable after-improvement takes place. They should never be used in the slight cases which may be expected to improve under other remedies, but in obstinate cases, in experienced hands, the method is one worthy of consideration.

REFERENCES.—[1]*New York Med. Rec.*, July 14, 1900; [2]*Arch. f. Derm.*, vol. li, part 1; [3]*Ibid.*, vol. lvi, part 3; [4]*New York Med. Rec.*, Aug. 11, 1900; [5]*Colon. Med. Jour*, vol. iv, 1899.

MALARIA. *James Cantlie, M.B., F.R.C.S.*

Our knowledge of malaria and its relation to the mosquito has received ample confirmation from many sources during the year 1901. The several expeditions sent out by the Liverpool School

of Tropical Medicine to the West Coast of Africa have not only shown us how malaria may be fought, but have added a great deal to our scientific knowledge of the disease. The well-known expedition also to the Roman Campagna during the summer of 1900, when Low and Sambon lived for three months in a mosquito-protected hut during the most malarial season of the year, testified to the protection and immunity obtainable by warding off mosquitoes during the evening and night. The power of malaria-infected mosquitoes to harbour and convey the malarial parasite was demonstrated beyond doubt by the experiments conducted at the London School of Tropical Medicine, when Manson and Warren were bitten by malaria-infected mosquitoes brought from Italy to London. Both were infected, and suffered from tertian malarial attacks.

In Italy, more particularly amongst railway servants, experiments have been made with mosquito-protected dwellings, with marked beneficial effects upon the health of the people thus protected.

On the West Coast of Africa, under the direction of Major Ronald Ross, attempts are being made in several towns and settlements to eradicate malaria by the destruction of their breeding places. Pools are being filled in, swamps around the towns and villages drained, and the larvæ are being destroyed where either of the former plans are inapplicable, by pouring cheap oils on the surface of the breeding pools or tanks. An improvement in the health of several localities has been already noticed, and the sick rate diminished considerably.

J. M. Young[1] finds that in Hong-kong he was able to trace a salutary influence upon the health of a community, so far as malarial ailments are concerned, by clearing the environment of dwellings of all shrubs, greens, bamboos, etc., and by draining the breeding pools. The distance from any dwelling requiring such steps to be taken need not exceed 150 yards, as mosquitoes do not fly far, and without vegetation they cannot survive. Young regards culicicides, petroleum, lime, etc., as subsidiary measures to the good that ensues from destroying the vegetation around dwellings.

Malaria in Central Africa.—C. W. Daniels[2] states that malaria is prevalent all through Central Africa, and that near the equator it occurs at heights over 5,000 feet, and up to at least 3,200 feet at 15° south latitude. The prevailing type of fever is the autumno-æstival, and the chief agent in the distribution of malaria is the anopheles funestus.

Geographical Distribution of Anopheles.—In Central Africa[3] Daniels found the anopheles funestus to be the active blood-sucking

mosquito. Several other species, perhaps nine in all, were found, but experiments made as regards their power of becoming malaria-infected proved negative. The anopheles claviger, or according to Sambon, the anopheles maculipennis, is the chief agency by which malaria is spread in the Roman Campagna. Low,[4] during his investigations in the Island of Barbadoes, noted that the anopheles mosquito was not met with in the island, whereas the culex fatigans abounded.

In Hong-kong Young[5] found two distinct varieties of anopheles, the A. costalis and the A. sinensis, but whether both were malaria-bearing is not stated.

F. V. Theobald[6] recognised a new species of anopheles, *viz.*, A. paladis, from Sierra Leone.

The local distribution of some of the anopheles species is peculiar, and points to some important differences in the part they each play in the propagation of malaria. Although several varieties of anopheles may be present in a locality, it by no means follows that all or the majority convey malaria to man; and facts seem to point to the opinion that of the anopheles only a few are capable of transmitting malaria.

Mosquitoes, although incapable of existing in numbers away from plentiful vegetation, may be carried from a place where they prevail in numbers to districts where they are practically unknown. In the clothing, baggage, etc., of passengers, and in goods sent by railway, the insects may be conveyed for considerable distances, and with care, as we have seen, they may be transported from Rome to London and still possess their power of infecting The assumption that malaria is carried long distances by prevailing winds is probably incorrect, as mosquitoes in strong winds seek shelter in the nearest vegetation until the wind subsides.

That malaria can appear as a *new disease*, or in the form of a *recrudescent outbreak*, is well illustrated in the case of the island of Mauritius, and in the town of Middleburg in Zealand, Holland. In Mauritius malaria was unknown until about the year 1876, when it broke out in a very severe form; and in Zealand, according to A. van der Scheer and J. B. van Berlekom,[7] malaria reappeared after an interval of thirty years. The Zealand outbreak served to illustrate well the mosquito-malarial theory, for in the outhouses, stables, rabbit hutches, etc., attached to the dwellings, in which cases of malaria occurred, anopheles maculipennis abounded. The fact that mosquitoes have the power of infecting human beings with malaria as far north as Holland, is calculated to enlarge our views

as to the conditions of temperature, etc., under which malaria and the malarial-infecting mosquitoes maintain their influence.

Anopheles in Great Britain.—G. H. F. Nuttall and L. Cobbett, and Mr. Strangeways-Pigg[8] state that there are three species of anopheles in Great Britain, namely, A. maculipennis, A. bifurcatus, and A. nigripes ; of these the first-named is by far the most common. Anopheles are found in Britain in low-lying lands where ditches, pools, ponds, and slowly flowing water suitable as breeding places for mosquitoes are met with. As these mosquitoes are found away from regions in England where malaria formerly prevailed, it would appear that the disappearance of malaria from England does not depend upon the extinction of mosquitoes capable of harbouring the parasite, but is probably due to drainage, etc.

The Immunity of Natives[9].—The assumed immunity of adult natives to malaria admits of explanation. Christophers and Stephens found in one part of Lagos that every child under two was infected, and 71·4 per cent. of those between two and five years of age ; in other places also a high percentage of infection obtained. Daniel's[10] report on 1,289 unselected *post mortem* examinations made in British Guiana on persons either born there or coming from other malarious countries, showed that malarial pigment in children under one year occurred in 54·5 per cent. : from two to five years, 8·15 ; from five to ten years, 67·5 ; from ten to fifteen years, 77 per cent. ; from twenty-five to thirty years, 30·3 per cent. ; from fifty to sixty years, 11·1 per cent. The presence of malarial parasites in the blood without fever has been frequently noted in the case of children in tropical climates. This phenomenon is explained by some observers as being due to an immunity transmitted from the parent to the offspring ; a theory which is wholly unproven. Experiments go to show that natives do not suffer less than Europeans from mosquito bites. The irritation caused by the bites is less in the case of the native, but mosquitoes are attracted, at least in Sierra Leone, more by the native than by the white man. This fact was proved by noticing that in a tent in which a European slept only a few anopheles were caught, whereas in the same tent anopheles swarmed when natives slept in it. After the departure of the natives anopheles again diminished in numbers. It would appear, therefore, that the immunity of the adult natives is due to the fact that in childhood they suffered continuously from malaria, few, if any, escaping.

Prophylaxis.—Protection from mosquito bites is the true prophylaxis in malaria. This form of prophylaxis may be brought about by protecting the body, the bed, or the dwelling from mosquitoes ;

or, on the other hand, the mosquito itself may be destroyed by rendering the development of its young impossible. *Netting:* As a protection against mosquitoes the use of fine gauze around the bed dates from an early period. Gauze, however, is apt to tear, to get foul, and smell earthy, and unless its meshes are very fine mosquitoes can pass through it. Wire netting has come into use lately, and possesses many advantages. The disadvantage of any kind of netting around the bed is that the air within it gets very close and stagnant, rendering sleep well nigh impossible in very hot and close weather. Besides, mosquitoes bite in the early evening, and by biting the ankles even through the stockings, the head or the hands, can inoculate the human being. A mosquito-protected house is theoretically the ideal form of warding off mosquitoes, but it implies considerable care and a state of education in hygienic matters which it will take a considerable time to educate the ignorant native to follow.

Mosquito Destruction.—By the drainage of swamps, by filling up stagnant pools, by the closing of tanks near houses, by clearing of undergrowth and of close vegetation, by pouring oil on the breeding places of mosquitoes, is protection from malaria being sought at present. Experience goes to show that this plan of obtaining freedom from malaria is scientifically sound, although difficult of application. The drainage of waste parts of the earth is a problem too huge to be contemplated by any nation or group of nations, but from what we know of mosquito life it is not requisite. The mosquito cannot fly far, and cannot maintain its power of propagating malaria unless it finds shelter within, say, 150 yards of a habitation. The destruction, therefore, of breeding places within the area on which any dwelling stands, to the extent indicated, should free the inhabitants of that house from malaria. But, unfortunately, all the malarial-bearing mosquitoes do not bite at night only, and as during the day the cultivator of the soil will have to go farther afield than the " healthy " area around the dwelling, he is apt to become infected. Still the immunity obtained by such measures would be, and is, relatively very great.

Clothing.—It is of the utmost importance that the feet and ankles should be protected, more especially in the evening. This can be done by using high boots, leggings, or double socks. The colour of the clothing has also some influence in warding off mosquitoes, and dressing for dinner or at sunset in dark clothing is recommended.

Other expedients are: (*a*,) Sprinkling strongly smelling **Essential**

Oils on the clothing, whereby mosquitoes are warded off ; (*b*,) Burning matchwood, joss-sticks, or any fragment of smouldering material beneath the dining table ; (*c*,) The mosquito lamp, termed in China "the Swatow lamp," and now obtainable in London, is a useful method of destroying mosquitoes in a room or within a mosquito net.

J. A. Wegg[11] says that sprinkling some ordinary **Kerosene Oil** about the bedroom and tying a handkerchief or clean towel, soaked in the oil, to the bed-posts above the head of the occupant of the bed, is an excellent adjunct to the mosquito net. **Carbolic Soap** rubbed on the face, neck, hands and forearms before retiring to bed is also recommended by the same writer.

The administration of Quinine as a prophylactic has many supporters, who recommend its use once or twice a week in 5-grain doses, or in 5-grain doses every morning whilst the "fever" season lasts, or whilst passing through a malarial district.

Andrew Duncan[12] draws attention to the prophylactic power of **Quinine** during several expeditions. The Austrian and Russian surgeons found no advantage in its use. Pola experimented on 736 soldiers ; amongst those who took quinine 18 per cent. developed malarial fever, and amongst those who did not, 28 per cent. Dr. Duncan's own observations made upon Sikh and Goorkha soldiers show the prophylactic action of quinine to be of some value. In the Malay war and in the Ashanti war no benefit was observed by taking quinine prophylactically.

Medicinal Treatment.—The subcutaneous injection of **Quinine** is occasionally followed by local abscesses, which has prejudiced some against its use. Several records, however, bear testimony to the beneficial action of quinine administered subcutaneously in advanced and serious cases of malarial fever. Osborne Browne[13] uses as much as 20 grains of **Quinine Bi-hydrochloride** injected into the gluteus maximus. David Alexander[14] used quinine hydrochlorate dissolved in dilute hydrochloric acid, the sulphate of quinine dissolved in hydrochloric acid, solutions of quinine in hydrobromic acid and in tartaric acid, all with untoward effects, abscesses being caused by each drug employed. Browne, however, found by using the bisulphate of quinine, which is readily soluble in water 1-20, that the drug could be safely and advantageously employed. Townshend[15] states that by following Benson's method, namely, sulphate of quinine dissolved in hydrochloric acid (grs. xv to 1 drachm), and injecting 20 minims of this solution between the scapulæ, that troublesome abscesses often occurred, with necrosis

of bones. It would appear, however, that (1,) with aseptic precautions; (2,) using a soluble salt; (3,) and injecting deeply into the substance of the muscles, preferably the gluteus maximus, the intra-muscular injections of quinine afford an efficient form of administration when a case of fever is advanced or becomes dangerous to life.

Cacodylate of Sodium[16] in the treatment of malarial cachexia finds an ardent supporter in Billet, of Constantine, Algeria. Quinine was given during the attacks of fever, and subsequently $3\frac{3}{4}$ grains of cacodylate of sodium were injected at intervals of three or four days.

Methylene Blue is strongly recommended by Smithwick[17] in malaria with hæmaturic complications, and in pregnant women suffering from malaria. This authority terms methylene blue a perfect succedaneum for quinine, and states that it may be given whenever quinine is indicated.

Serum Treatment.—Kuhn[18] reports that by a serum obtained from horses which have contracted the so-called "sterbe" disease, he has succeeded in curing malarial fevers in South Africa. By injections of this serum malaria is said to become altered from a chronic relapsing ailment to an acute one curable in from two to six weeks; immunity is also said to be obtained. Of fifty immunised natives none contracted the disease during the malarial season, whereas numerous other persons non-immunised fell ill, but were cured by the injection. Although it is some time since this statement was made, nothing further has been heard of it.

REFERENCES.—[1]*Brit. Med. Jour.*, Sept. 14, 1901; [2]*Ibid.*, Jan. 26, 1901; [3]*Ibid.*; [4]*Ibid.*, Sept. 14, 1901; [5]*Ibid.*; [6]*Ibid.*, Jan. 26, 1901; [7]*Ibid.*,; [8]*Jour. of Hygiene*, Jan. 1, 1901; [9]*Brit. Med. Jour.*, Jan. 26, 1901; [10]*Ibid.*; [11]*Ibid.*; [12]*Ibid.*, Sept. 15, 1900; [13]*Jour. Trop. Med.*, Oct. 15, 1901; [14]*Ibid.*; [15]*Ibid.*; [16]*New York Med. Jour.*, Aug. 25, 1900; [17]*Merck's Arch.*, Feb., 1900; [18]*Med. Rec.*, Feb. 2, 1901.

MAMMARY CANCER. (See "Cancer.")

MASTITIS (Chronic, in the Male). *Priestley Leech, M.D. F.R.C.S.*

Niclot and Massoulard[1] have a very interesting article on this subject. Chronic mastitis is not of common occurrence in the male, and is confined to adult life, the average age being twenty-six, and the extremes eighteen and fifty. The majority of cases occur among persons more or less exposed to traumatism—especially soldiers; continued friction, as from braces, may also cause it. Acute mastitis occurs apparently independently of any very obvious cause, and

there is no evidence that it passes on to the chronic form. The right breast is more commonly affected, the two chief symptoms being pain and swelling; as a rule there is some tenderness on pressure. On palpation it is irregularly nodulated. The prognosis is favourable, and it does not tend, so the writers say, to pass on into new growth. **Removal** is the best form of treatment.

REFERENCE.—[1]*Arch. de Méd. Exper.*, Nov., 1900.

MAXILLARY ANTRUM. *W. Milligan, M.D.*

Max Halle[1] advocates the opening and subsequent drainage of the maxillary antrum through the nasal passage. After thorough cocainisation of the mucosa he thrusts a Krause trochar through the external nasal wall into the antrum, the opening being made as near to the floor of the nasal fossa as is possible. He condemns the alveolar route.

Malignant Disease.—Holbrook Curtis[2] reports a case of primary epithelioma of the maxillary antrum occurring in a female patient, aged fifty. The cavity was explored through the canine fossa and scrapings microscopically examined. The main points of interest in the case were: (1,) The primary invasion of the antrum by the cancer; (2,) The epitheliomatous nature of the growth; (3,) The rapidity with which the growth extended after exploratory operation.

REFERENCES.—[1]*Berlin klin. Woch.*, Aug. 27, 1900; [2]*Laryngoscope*, Oct., 1900.

MEASLES (Morbilli). *Edward Wilberforce Goodall, M.D.*

In a discussion which took place at the Cheltenham meeting of the British Medical Association in August, 1901, upon the subject of the early diagnosis of the acute specific fevers, reference was made by most of the speakers to the occurrence of Koplik's spots in measles. The general opinion was that when these spots were present, a positive diagnosis could be made, but that they were not, unfortunately, to be found in every case. An account of these spots was given in the *Medical Annual* for 1901, p. 379.

The two accompanying charts are such as are very commonly obtained in cases of measles. The rash usually comes out on the third or fourth day, but may appear on the first or second, or be delayed to the sixth or seventh. During the prodromal period there is irregular pyrexia. *Chart I* shows the remission, a very common phenomenon. During the remission, not only does the temperature fall, sometimes to normal, but the initial symptoms abate or disappear, so that if the observer is not on his guard he may conclude that the patient has been suffering from a slight cold and is now

CHART I. MORBILLI: *Male, age 2.* *Recovery.*

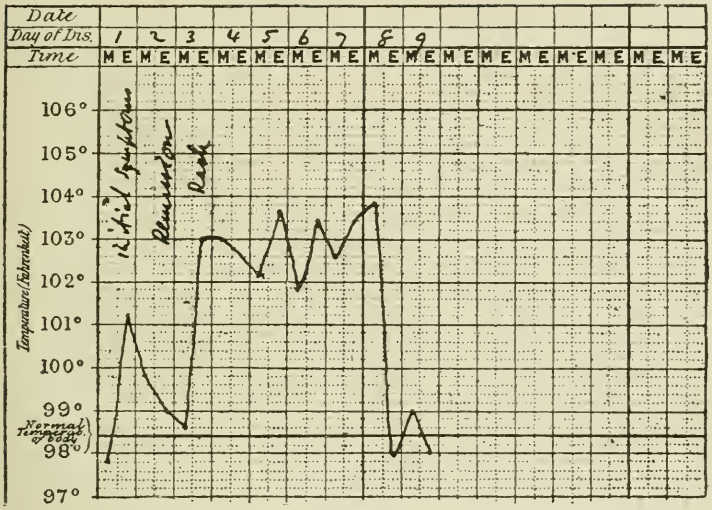
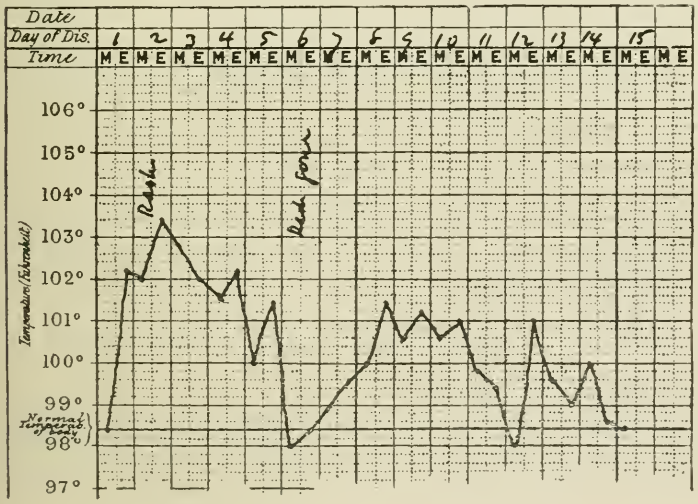


CHART II. MORBILLI: *Female, age 3½.* *Recovery.*


Date
Day of Dis. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Time M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
106°
105°
104°
103°
102°
101°
100°
99°
Normal Temperature of Body
98°
97°
Temperature (Fahrenheit)
Rash
Red fauces

getting well. With the fading of the rash the temperature falls quickly, but it may be kept up by, or, as in *Chart II*, rise again on the occurrence of some complication, often bronchitis or lobular pneumonia. Koplik's spots should be looked for during the prodromal period. During this period also an erythematous rash may appear. It is diffused over the trunk, to which it is usually confined. Though not usually punctate, it may be mistaken for the rash of scarlet fever.

TREATMENT.—The patient should be kept in a well-ventilated room of which the temperature is kept at about 65° F. If the air is dry (as when east winds are prevalent, or in wards or apartments heated with steam or hot-water pipes), it is beneficial to keep a bronchitis-kettle going so as to moisten the air. This treatment is especially useful when there is laryngitis or bronchitis, or when the patient is troubled with frequent, harassing, and "hard" cough. Such aromatic substances as **Creasote, Compound Tincture of Benzoin,** or **Eucalyptus** may with advantage be added to the water in the kettle. In some cases photophobia will necessitate a partial darkening of the room. The diet should consist during the febrile period of liquids, which, if there be any respiratory embarrassment, should be administered in small quantities at frequent intervals. Provided there are no complications, the patient may be allowed to sit up out of bed four or five days after the temperature has become normal. In fine, warm weather he may be allowed out of doors after another week, but in cold weather must be kept in-doors for a longer period, two to three weeks, according to circumstances.

High temperature and delirium are best treated by sponging, or packing with tepid water. **Cold** or even **Iced Water** may be applied with a sponge to the head and trunk in robust children when the temperature is persistently high and cannot be lowered by other methods. But if it is necessary to resort to such measures, they should be carried out in the presence of the medical attendant, and it is advisable to administer a stimulant to the patient immediately before the sponging. Of antipyretic drugs **Quinine** and **Antifebrine** in small doses are the best and safest; the latter acts also as a sedative to the nervous system.

Great attention should be directed to the keeping clean of the mouth, ears, and eyes, as stomatitis, otitis, and ophthalmia are frequent sequelæ of this disease.

There is reason to believe that the lung-complications of measles are infectious; so that if amongst several cases of measles that are being treated in the same ward, one develops bronchitis or pneumonia, it is advisable to remove such an one to a separate room.

Measles is not infrequently complicated with diphtheria, which is then very apt to attack the larynx; therefore, on the slightest sign of laryngeal complication, even though there is no appearance of membrane or exudation on the fauces, antitoxin should be injected.

MEMBRANOUS COLITIS. *R. Hutchison, M.D.*

The following abstracts are from papers read at the Thirteenth International Congress at Paris. Julius Mannaberg, physician to the general Polyclinic, Vienna, said that a distinction must be made between membranous enteritis and mucous colic. By membranous enteritis is understood a subacute or chronic catarrhal affection of the large intestine, accompanied by evacuations particularly rich in mucus. By mucous colic is denoted a morbid state of which the special clinical symptoms are:—Paroxysmal crises of colic, followed by evacuation of masses of mucus. It is a question whether the two processes may occasionally be combined. The first named is nothing more than a catarrh of the large intestine characterised by an abundant evacuation of mucus; it has the same pathogeny on the whole as ordinary catarrh of the large intestine. Mucous colic on the contrary has a special pathogeny. In the great majority of cases it rests on a basis of general neurosis. In the exceptional cases where there is no underlying general neurosis, the morbid state must be regarded as a mono-symptomatic neurosis of the intestine. In addition to this fundamental etiological factor, certain occasional factors capable of producing paroxysms must be taken into account. The principal among them were diseases of the genital apparatus (in man as well as in woman), mental disorders, constipation, irritating rectal irrigations, organic diseases of the intestine. Mucous colic was frequently accompanied by other pathological manifestations, to which its production cannot be attributed, but which may be regarded as equivalents of the fundamental nervous element—gastric achylia, nervous dyspepsia, spasmodic constipation, enteroptosis. The pathological anatomy of membranous enteritis was the same as that of enteritis in general. In the very rare cases in which it had been possible to make an examination, either on the living or the dead body, no appreciable lesion of the mucous membrane had been found.

F. Boas (Berlin), next dealt with the symptomatology, diagnosis, and clinical course of muco-membranous colitis: (1) By muco-membranous colitis is understood a special catarrhal disease tending to plastic mucous formations of the colon. (2) In addition to this form, which is the most frequent, there is another much more rare,

in which the process manifests itself in paroxysms, whilst in the intervals there is no noticeable malady except constipation; this form is denoted by the term mucous colic. (3,) Lastly, there is a third form which may be designated by the name of artificial muco-membranous colitis. By astringent injections, especially tannin, this form may be induced in persons who are the subjects of colitis, but not in healthy individuals. The symptomatology of muco-membranous colitis includes constipation, colic, spasmodic atony of the intestines, glairy or membranous masses in the stools, and a general neurotic state. Several of the symptoms may be wanting, the only one of them that is almost constant being constipation. That which alone determined the diagnosis was the existence of characteristic mucous masses; other symptoms at the most can only help to confirm the diagnosis. It is indispensable that it should be ascertained whether the muco-membranous colitis is an idiopathic condition or a complication; it is equally of importance to ascertain whether the membranous colitis is of artificial origin. In regard to differential diagnosis, the only alternative that need be considered is mucous colic; by frequent observations and methodical intestinal injections in the intervals, it will almost always be possible to come to a decision. The clinical course of muco-membranous colitis is parallel to that of habitual constipation; influences which correct the latter will cause the former to disappear, and *vice versa*.

Dr. Albert Mathieu, physician to the Hôpital Andral, Paris, confined himself to a summary review of the principal pathogenic and symptomatic indications, and the broad lines of treatment corresponding thereto. Constipation was the rule in muco-membranous colitis; it was often spasmodic. The diarrhœa, which is always transient, was the result of a *débâcle* or an attack of catarrhal colitis. There always existed in muco-membranous colitis a secretory irritation of the mucous membrane. It did not occur in its full intensity except in individuals predisposed by a pre-existing neuropathic condition. The colitis tended to aggravate this neurosis, and localise it in the abdomen. The same held good with regard to visceral ptoses. Certain complications, acute dysenteriform or febrile attacks, hæmorrhage, etc., furnished special indications for treatment. Constipation was at once a cause and an effect; before everything, the removal of this condition must be aimed at, its disappearance being the sign and guarantee of the cure of muco-membranous colitis. In dealing with it measures must be employed that do not increase either the secretory irritation, the pains, or the tendency to spasm.

Castor oil, large **Enemata**, and **Belladonna** are especially useful. The castor oil should be given in the morning in small doses with the early breakfast, its employment should alternate with that of the large enemata; these should be given at a low pressure, slowly, and at a temperature near 104° F., in doses of 1½ to 2½ litres. These enemata soothe the painful and spasmodic irritation of the intestine, bring about the evacuation of material accumulated within it, and act as a mechanical antiseptic. Boiled water may be used, with a weak solution of **Biborate** or **Salicylate of Soda** to reinforce the antiseptic action, and a very dilute solution of neutral **Ichthyolate of Ammonia**, to exert a modifying action on the intestinal catarrh. Care must be taken to avoid everything likely to cause irritation of the bowel; for instance, drastic purgatives, astringent injections, massage in the cases where there is marked hyperæsthesia of the intestine or painful spasm of the colon. It had sometimes been recommended that food rich in vegetable detritus—green vegetables, cooked fruits, whole-meal bread, etc.—should be given; in many cases, however, this is not tolerated, and one is obliged to prescribe a regimen that favours constipation, but lessens the irritation of the digestive mucous membrane. **Enemata of Oil** are often very useful, especially combined with large enemata at low pressure. **Belladonna** is often prescribed with success; it soothed pain, and antagonised the tendency to spasm. More rarely one may have recourse to **Opium** and its derivatives. Hot local applications and hot baths have a useful sedative effect; prolonged baths and large hot enemata form the basis of the treatment at Plombières and similar stations; but ascending douches given at too high a pressure had been abused. It is often also of advantage to act on the general neurosis by the employment of nerve sedatives and hydrotherapy. The dysenteriform attacks should be treated with enemata of a weak solution of **Nitrate of Silver**; the hæmorrhages by preparations of **Hamamelis** and large enemata at a temperature of 113° F.

Thomson[1] summarises his views on the treatment of membranous colitis as follows:—

The first indications are to relieve the colonic symptoms proper, that is, symptoms which are more or less common to all diseases of the colon. Nothing is so soothing to the tenesmus, the cutting and bearing-down pains, and the general abdominal distress, as free **Irrigation** of the colon with normal saline solution, to which may be added oil of peppermint, 5 drops to the pint. Three to five gallons, at a temperature of 100° F., may be employed once in twelve hours, and given by Kemp's rectal irrigator, according to the printed

directions furnished with this simple and serviceable instrument. Care must be taken, however, that all fluid is returned, lest any retained may provoke a return of pain, acting as an enema; by a little practice this may be avoided. Quantities of mucus are thus dislodged and washed away, but it frequently happens that after the irrigation, the patient subsequently has a painless movement consisting of a large amount of simple mucus without shreds or membrane. Sometimes benefit follows from using at the end of the irrigation a gallon of water, in which from 60 to 100 grains of **Resorcin** has been dissolved, being careful that it is all expelled afterward. Once a week a pint of clean, hot water with 30 to 40 grains of **Silver Nitrate** may be used instead of the resorcin.

Unfortunately this irrigation is not curative. The next question is respecting any medicinal remedies which can be expected to be of service in changing the disordered nutrition of the intestinal mucous membrane? He believes that we have one such remedy, *viz.*, small, alterative doses of **Castor Oil.** Some patients report that the relief afforded by this medicine has been most unmistakable from its first administration. He prescribes it in an emulsion, of which each tablespoonful contains from ½ to 1 drachm of the oil, preferably half at first, to be taken either half an hour before meals or an hour after meals. This should be continued for months together, and only remitted when it seems unmistakably to increase the patient's dyspeptic symptoms. **Nitrate of Silver** in quarter-grain doses, combined in pill or capsule form with 9 grains of **Turpentine Resin**, and taken three times a day, is sometimes of much service, although not so uniformly as in chronic catarrhal or ulcerative colitis, in which complaints a quarter of a grain of **Opium** is added. To enable the turpentine to dissolve and not to pass the bowels unchanged, it should be pulverised well with liquorice powder, and a drop or so of liquor potassæ added to each capsule. After the silver has been taken for six weeks, **Sulphate of Copper** in quarter-grain doses can be substituted for it.

The stomach is apt to be dilated, and the small intestine the seat of disturbed innervation and a perverted secretion. Five grains of **Resorcin** in solution with **Nux Vomica** tincture, half an hour after meals, constitutes a good prescription for the gastric symptoms, to be supplemented by 10 grains of **Sodium Benzoate**, and 10 grains of **Bismuth Salicylate** in capsules, an hour after each meal, as intestinal antiseptics. We should, however, from the first bear in mind the probable dependence of the disease itself on chronic constipation, and against this he employs salines exclusively. From 1 to 2 drachms

of **Sodium Phosphate** with 10 grains of **Sodium Salicylate** should be given every morning in a tumblerful of water as hot as the patient can sip it. After a time the same quantities of **Magnesium Sulphate** may be substituted. Daily **Massage** of the bowels, particularly of the tract of the colon, is also to be highly recommended. As to diet, we may simply exclude beans, corn, spinach, and the woody vegetables, along with oatmeal among the cereals, and encourage the patients to eat meat, poultry, eggs, zoolak or koumiss, peptonised milk, and most cereals. In some cases pancreatic emulsion is of marked service. Finally, bodily movement and out-of-door exercise is beneficial on general principles. Repeatedly we find a summer change to the country do more good than anything else.

The following prescriptions are also recommended. Castor oil is the best laxative. As a succedaneum :—

℞ Magnes. Calcin. | Potass. Bitart.
Sulphur Loti | āā 20

S. A teaspoonful before each meal.

—G. See.

℞ Podophyllin | Ext. Bellad. 0.20
Euonymin āā 0.40 | Ext. Hydrastis Canad. 1.

M. ft. pil. No. xx. S. One or two at dinner.

—G. Lyon.

References.—[1]*Med. News*, June 2, 1900; [2]*Med. Rec.*, July 28, 1900.

MENINGITIS (Posterior Basic). *R. Hutchison, M.D.*

Most recent investigators are of opinion that posterior basic meningitis is merely a sporadic form of epidemic cerebro-spinal meningitis. This view is confirmed by the fact that the diplococcus originally described by Still in cases of posterior basic meningitis, has now been shown to be practically identical, except in virulence, with the *diplococcus intracellularis menengitidis* of Weichselbaum. If this view is accepted we must henceforth look upon posterior basic meningitis as a disease comparable in certain points to pneumonia, which, while as a rule a sporadic disease, occasionally presents itself in epidemic form.

Symptomatology.—As the result of a recent study of seventeen cases of posterior basic meningitis, Thursfield describes the clinical characters as follows :—

Ten of the cases occurred in males and seven in females. Four of the patients were in their fourth year and over, a much larger proportion than Sir Thomas Barlow and Dr. Lees found. These four cases all gave rise to considerable difficulty in diagnosis, and two of

them were cases that recovered, so that absolute proof of the correctness of the diagnosis is wanting. Excluding these four the average age of the patients attacked was nine months, the youngest being just three months old.

As regards the first symptoms, this series corresponds exactly with the analysis given by Sir Thomas Barlow and Dr. Lees. Vomiting occurred first in nine cases, convulsions in four, and head retraction in three. Bulging of the fontanelle is noted early in the course of the illness in six cases. Retraction of the head is one of the cardinal signs, and sooner or later appears in all cases; but occasionally appears too late to be of much service in diagnosis. Further, there has been in the hospital during the period of time covered by this series, a boy, aged ten months, in whom retraction of the head to an extreme degree was constant, though at the necropsy there was no trace whatever of meningitis. It is also worthy of remark that this symptom was well marked in only one of the four older cases, whereas it was obvious in all but one of the remainder.

Strabismus was a fairly frequent and early symptom, as also was nystagmus, occurring in about half the cases; but the chief ocular symptoms, with one exception mentioned later, are to be sought by means of the ophthalmoscope, for thirteen of the seventeen cases showed definite changes in the fundus. In five there was pronounced swelling of the optic discs, which was very easily recognised, and indeed could not be overlooked; in one of these there were in addition several flame-shaped retinal hæmorrhages. In four cases there was a peculiar grey discoloration of the optic disc, which appears to be peculiar to this disease. It is not atrophy, for the retinal vessels retain their normal size, and the disc does not appear hollowed, but it has an unusual opaque grey appearance quite unlike a normal disc. In the remaining four cases the changes were such that he does not venture to call them papillitis, yet they are of that nature. In looking at these eyes with the ophthalmoscope regularly week by week, the optic discs which were at first absolutely normal, became slowly more and more obscure, and in focussing accurately, one could see that at the edge, the finer vessels took a sharp curve, so that there was obviously some swelling—rarely more than 1 D of the papilla, though the edge of the disc still remained distinct.

Amaurosis was noted in seven cases, and was probably present in several others, but it is a symptom which is extremely difficult to ascertain with precision in young infants. The other important

ocular symptom, mentioned previously, is retraction of the upper eyelid, which occurred in seven of these cases. It is extremely characteristic of posterior basic meningitis, and, so far as he has been able to observe, extremely rare in any other form of meningitis. Indeed, one might venture on an antithesis: in tuberculous meningitis there is photophobia and closure of the eyes, while in posterior basic meningitis the eyes are widely open with retracted upper lids, as if seeking the light.

The other chief features of the disease—vomiting and progressive emaciation—were present in all cases, though in six cases the vomiting was slight. The emaciation was always pronounced and rapid even in the two patients who recovered, and apparently is independent of vomiting or diarrhœa, for in cases where these are absent the emaciation still progresses steadily. One month's duration will reduce the patient to mere skin and bone, in striking contrast to cases of tuberculous meningitis, which are not infrequently found possessed of considerable quantities of subcutaneous fat at the necropsy. The remaining features of the disease are those common to nearly all forms of meningitis; and too uncertain to permit of any stress being laid on them. None of the series had any joints involved.

Diagnosis.—In this connection lumbar puncture and Kernig's sign deserve special mention. The former is of great value, but only when the results are positive; a negative result does not exclude the possibility of meningitis. Kernig's sign is present in the great majority of cases, but is not pathognomonic. It has also been found present in lateral sinus thrombosis, cerebellar hæmorrhage, etc., in which no evidence of meningitis could be discovered *post mortem*.

Treatment.—**Lumbar Puncture** is recommended as a therapeutic measure, especially by American writers. It must be practised early in the disease, and continued with more or less frequency according to the gravity of the case. Under these conditions it seems to prevent extreme prolongation of the course, and often unfortunate sequelæ. It is of less use in the tuberculous cases. Osler, also, found that his epidemic cerebro-spinal cases derived no benefit from the procedure, and it must be admitted that the pathological lesions found after death are of such a nature and in such situations as to offer but little hope of benefit from spinal drainage. All other methods of treatment seem to be useless, though some writers believe in the energetic use of **Mercury** in the non-tuberculous form of the disease.

MENSTRUATION (Disorders of).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Amenorrhœa.—In cases of the chlorotic type the following prescription is recommended[1] :—

Phosphate of Iron	grs. 60	Ext. of Absinthe	grs. 45
Aloes	grs. 15	Ergotin	grs. 30
Hydrochl. of Quinine	grs. 30		

M

Make sixty pills, of which three to five may be taken daily, from half an hour to an hour before each meal.

In anæmic cases, and also in cases where no constitutional or definite local cause can be ascertained, Bloom[2] recommends the following :—

Sulphate of Strychnine	grs. $1\frac{1}{5}$	Lactate of Manganese	grs. 120
Oxalic Acid	grs. 9	Comp. Extract of Colocynth	grs. 30
Peptonate of Iron	grs. 120		

M

Make sixty powders. One powder to be taken about an hour after each principal meal.

Metrorrhagia.—Inglis Parsons[3] directs attention to those cases of metrorrhagia in which no gross lesion is found, and in which curetting shows thinning rather than thickening of the endometrium and is not followed by improvement. The condition corresponds to that described by Wyder as "interstitial endometritis," and on microscopical examination an excess of fibroid tissue is found in the uterus, although no actual fibroid tumours are present. He points out that in most cases the patients are single ; or, if married, they have remained sterile for some years. Treatment by drugs is commonly useless, and hysterectomy has been advocated and carried out. Parsons contends that this severe measure is not necessary, and that a cure will follow applications of the **Constant Current,** with the positive electrode in the uterus. At the first application only a mild current should be used, not more than 50 milliampères, subsequently it can be slowly raised until the galvanometer indicates from 75 to 100 milliampères. This is kept on for ten or fifteen minutes. The patient need not lie up during the treatment, and, except in extreme cases, can come to her medical man's house for the applications, which should be made twice a week. An antiseptic vaginal douche should be used every day, morning and evening. It need hardly be said that the electrode must be absolutely clean, and should be placed in an antiseptic solution like any other instrument before being used for operation. The number of

applications required will vary according to the severity of the case. Whatever the number required to reduce the loss to normal proportions, half that number must in addition be given in order to produce a permanent result. The treatment is suspended for a week during menstruation, and if at the end of that time the loss has not stopped, it should be disregarded and the treatment continued.

On the other hand, Philippot[4] believes **Faradisation** to be the best method of treating metrorrhagia. Its field of action is more extended than that of galvanisation. It arrests positively the bloody discharge after a few applications which follow each other closely. Its employment is far more simple. It does not expose the patient to the unpleasant consequences to be feared from the other method. It is painless, and causes most of the subjective phenomena to disappear rapidly.

An entirely different plan is that advocated by Bourcart,[5] namely, the intra-uterine injection of **Gelatin** in a 2 per cent. solution. In a woman, aged forty-three, with chronic metritis and profuse metrorrhagia which had resisted two curettings and injections of iodine and chloride of zinc, and where plugging was required at each menstrual period, a single intra-uterine injection of 10 c.cm. of the gelatin solution arrested the hæmorrhage completely. In a case of profuse hæmorrhage during parametritis and left ovaro-salpingitis, where the enlarged uterus was retroflexed and fixed, two injections were sufficient. In hæmorrhage in a case of retroflexion of a moveable atonic uterus, the injections arrested the hæmorrhage temporarily (although the position of the uterus was not rectified), but required frequent repetition. The injections are said to be most valuable in cases of uterine fibroid tumours, where they may obviate the necessity for a radical operation. Thus, in a woman, aged fifty-four, with a large interstitial fibromyoma and fungous endometritis in which further hæmorrhage would have probably proved fatal, two injections of 15 c.cm. of the gelatin solution, introduced through a small gum-elastic catheter passed to the fundus of the enlarged uterus, definitely arrested the hæmorrhage. The procedure should be repeated every month, or as soon as hæmorrhage returns. Strict asepsis is necessary in carrying out the injections, and afterwards a vaginal tampon should be introduced and left in till the next day. The temperature at which the liquid gelatin is injected has no effect on its hæmostatic property, and may range from 68° F. to 104° F. For a few days after an injection tiny transparent masses, streaked with blood and evidently composed of gelatin, are passed.

Bourcart has never met with pain, painful uterine contractions, pyrexia, or other ill-effects from the injections.

Intermenstrual Pain.—This condition has not hitherto received the attention which it deserves, and the consequence is that it is as yet only imperfectly understood. Storer[6] believes that it is not so rare as is generally supposed; in fact, during one year he met with it eighteen times in 400 "suitable cases" in which he inquired as to its existence. Analysis of twenty cases under his care and of twenty-five collected from literature led to the following conclusions. As regards regularity, the pain in all cases appeared practically every month. In twenty-two cases it always occurred on a definite day from the beginning of the last menstruation; in thirteen there was a variation of two days, and in four of four days; in two with irregular menstruation it occurred on a definite day before the next menstruation. As regards day of appearance from the first day of the previous menstruation, it came on from the twelfth to the sixteenth day in thirty-seven out of forty-one cases. As to character, in a large number of cases it was described as paroxysmal, the attacks either coming on at intervals of several hours and lasting from five to fifteen minutes, or the pain being constant, with exacerbations often of the greatest severity and resembling that of labour. As to duration, in ten it lasted two days; in nine, three; in eight, one; and in four, four or more. In no case was there a discharge like that of menstruation, but in two cases (one of bleeding fibroids and the other of hæmorrhagic endometritis) there was a slightly sanguineous discharge. Hence the term "intermenstrual dysmenorrhœa" is inapt. On the other hand, a marked increase of leucorrhœa is spoken of in ten cases, which is evidence of temporary congestion. As to causation, the pain in most of the books is described as ovarian, but it is not always so. In one case it disappeared after the removal of a hydrosalpinx; in another, after the uterus was curetted for endometritis; and in a third, stenosis of the internal os was apparently the only lesion. On the other hand, out of forty cases in which the local condition is stated, more or less of an inflammatory condition of the appendages is described in thirty ("ovaritis," fifteen; "salpingitis," twelve; and "hydrosalpinx," three).

Imperforate Hymen and Retained Menses.—Borland[7] records a case in a girl, aged thirteen years and nine months. The history was not characteristic, inasmuch as there had been no monthly periodic occurrence of pelvic or bearing-down pains; and yet the accumulation must have been going on for many months, to judge from the size of the abdominal swelling and the amount of fluid

evacuated, namely, over three pints. The illness began only six days before she came under observation. Diarrhœa was the first symptom, and the following day abdominal pain set in. This continued, and was followed by bearing-down pains, dysuria, and finally retention of urine. In the lower part of the abdomen was a large globular tumour rising out of the pelvis and reaching to 2 inches above the umbilicus. The vulva was greatly bulged downwards, and the perineum distended. The patient was prepared for operation on the following morning; but meanwhile a spontaneous perforation took place, which, although so small as to admit only a small probe, nevertheless allowed of the escape of a considerable amount of treacle-like substance. With strict antiseptic precautions a free incision was made, and the opening was maintained by means of a sterilised perforated glass tube. The recovery was normal, and six weeks after the operation the girl menstruated normally, being poorly for four days.

Disturbances of the Menopause.—Gottschalk[5] states that **Hot Saline Baths,** at a temperature of about 40° C., lasting for about twenty minutes, and taken every evening at bedtime, constitute an excellent means of combating the night attacks of heat and sweating from which so many women suffer at the time of a natural or post operative menopause; the favourable effects are usually manifest at the end of the first week, and twenty-six to twenty-eight baths are sufficient to cure the trouble altogether.

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METABOLISM Disorders of).

Bertram Abrahams, M.B., B.Sc., M.R.C.P.

The convenient word metabolism is used as a general term connoting all physiological changes effected in or by the cells of the body. As every pathological condition must affect tissue change in greater or less degree, so there is no disease which cannot be ranked under the head of disordered metabolism. It is proposed here to take a less extended view of the subject, and to limit its scope, as for convenience sake is usually done, to those affections in which the sole or main pathogenetic factor is an alteration in the internal secretions. These also in their widest aspect are coterminous with the whole of pathology, for every cell in the body takes something from the common stock, alters it within its substance, and returns the product

into the circulation. Each individual cell thus influences, just as it is influenced by, the rest of the body; and whereas these influences are normally correlated so as to maintain the chemical equilibrium of the body, an alteration in the balance between them such as may arise from the perversion of the cell's secretory function, may induce pathological consequences affecting the whole organism.

That the harmonious interaction of organs is largely affected by the influence of their secretions, has become increasingly evident during the past few years. Thus examples have been recorded of normal lactation after parturition in women whose spinal cords were crushed during pregnancy. The breasts began to secrete after the confinement, although they could not have possibly remained connected with the uterus by the intermediation of the nervous system. Associations which were formerly believed to be effected by nervous action are thus shown to be dependent upon bio-chemical activity, and a new aspect of pathology has been placed at the disposal of the clinician. The latter has perhaps seized somewhat too eagerly upon the mode of explanation thus offered; we are apt to talk a trifle too glibly of metabolic disturbances, and of auto-intoxications, and to forget that to refer the cause of an affection to faulty action in the bodily laboratory is in many cases merely to restate the terms of the problem without aiding its solution. For the essence of life itself is chemical change, and even if we could at a given moment crystallise—so to speak—the process, the result, however susceptible of careful investigation, would no more represent the actual conditions than an ice-field the sea.

Nevertheless the labours of pathologists and physiologists have resulted in the acquisition of a large body of undisputed facts, which we propose briefly to summarise more particularly in their relation to clinical medicine.

The Thyroid Gland.—The problems of internal secretion were first and most completely studied in connection with the thyroid gland. Certain of its diseases have been known from the earliest times. Regnault has indeed asserted that the aspect of the well-known Egyptian god of evil, Bès, is undoubtedly that of myxœdema. The experimental results of removing the gland were first described by Schiff, who was also the first to show (in 1859) that they could be obviated by grafting the gland into the injured animal. Then Ord gave the name of myxœdema to the now familiar clinical condition which had first been described by Gull, and showed that it was associated with atrophy of the thyroid gland. Next Semon noticed that the symptoms of myxœdema were similar to those

detailed by Reverdin and Kocher in patients from whom they had removed the thyroid. Following up this cue, Horsley discovered that the gland was essential to life in animals, enumerated the effects of its removal, and suggested that thyroid treatment might be useful in disease, a view which was strikingly confirmed in the case of myxœdema by G. R. Murray.

During the past few years two main lines have been followed in the further investigation of the subject. One school of observers has busied itself with the study of the chemical composition of the thyroid. In 1896 Baumann made the brilliant discovery that the gland contains a considerable quantity of iodine, which he followed up by showing that this element is entirely or almost absent in cases of goitre; the treatment of this disease by the iodides has thus been placed on a rational basis. More recently Gautier has announced the constant presence of arsenic in the thyroid, a discovery the significance of which has not yet been evaluated. The other direction in which research has been keenly prosecuted is connected with the parathyroids; the names of Gley and Walter Edmunds deserve particular mention in relation to this. It has been found that the fatal consequences of thyroidectomy only supervene if these accessory structures, which are built up of compound tubes secreting no colloid, be removed as well as the thyroid proper. Removal of the parathyroids alone appeared at first to be without grave consequences, but the researches of Vassale and General, Edmunds and Moussu have shown it to be even more fatal than if the thyroid be excised as well.

We may sum up our physiological knowledge of the thyroid by saying that (including the parathyroids) it is essential to life, for its complete removal is fatal; but death can be averted by grafting it, or feeding with it. Moreover, if one half be removed, the remainder hypertrophies. As to its function we are still uncertain. That it acts by virtue of its internal secretion we know, but whether this supplies a substance needed by the organism, or neutralises one that might be harmful, is not yet decided. Animal experiments show that it is associated with the hæmopoietic process, and confirm the clinical observation that its diseases entail profound disturbance of the nervous system. To the consideration of the modern views upon these diseases we may now turn.

Sporadic Cretinism.—Two varieties, or perhaps one should rather say stages, of this affection must now be recognised. They correspond respectively to the myxœdematous and cretinic conditions observed in Horsley's thyroidectomised monkeys. In the one form, to which the name of infantile myxœdema should be applied, a

more or less acute process supervenes in a child which appeared previously to be normal. The patient becomes fat, heavy and stupid, the tongue enlarges, and the temperature sinks. The condition of mental hebetude, which may replace one of ordinary intelligence, is precisely similar to that seen in a myxœdematous adult. In a remarkable case which was exhibited at the London Clinical Society —a society the name of which is indelibly written in the history of myxœdema—there was an indurated hypertrophy of the calf-muscles resembling that seen in pseudo hypertrophic paralysis; nothing abnormal could be detected in a piece of muscle removed by harpooning.

The other or really cretinic type may not be actually congenital, but is at least manifest from the time when evidence of intelligence ought to be dawning. The patients in this case belong to the group of stunted, pot-bellied dwarfs, with masses of fat over the clavicles; the skin generally is not, however, always tense, but may be wrinkled and shrivelled-looking. The child may be a complete idiot, or may possess a considerable share of crafty cunning; his mental processes may be deficient, but they are, to whatever extent present, of normal briskness.

The difference between these two classes is very marked from the point of view of therapeutics, and hence of prognosis; the former improve on, and may even be cured by, the administration of **Thyroid Extract,** from which the latter in my experience derive no benefit.

Myxœdema.—I have already referred sufficiently to the discoveries that this affection is due to absence of thyroid activity, and that it can be cured by the administration of the gland. Recent research has not added much to our knowledge on these points, but others of cognate interest have come under discussion. The cause of the tense shiny appearance of the skin was at first believed to be the presence of mucin in the subcutaneous tissue; this was shown later to be incorrect, except as an incident in the overgrowth of young connective tissue. Unna has recently reinvestigated the subject, and attributes the mucinoid appearance to an actual degeneration of the connective tissue, somewhat resembling the hyaline change. He states that the elastic fibres disappear, and the hyaline material accumulates in the lymphatic plexes. Brissaud has lately attempted to differentiate the symptoms of myxœdema into those of thyroidal and parathyroidal origin respectively. He explains those aberrant cases in which the physical signs are unaccompanied by psychical disturbance, as connoting integrity of the parathyroids; while the typical picture of the disease indicates the absence of both thyroid

and parathyroids. Gley, who has discovered Baumann's iodine compound in the parathyroid as well as the thyroid, opposes this view, and maintains that the former prepares the essential metabolic product which is stored for use in the latter.

Another point which seems to have been elicited of late, is that the **Fresh Gland,** given for instance in soup, is more therapeutically efficient than any secondary preparation.

Exophthalmic Goitre.—It cannot be said that the pathogenesis of this interesting affection has as yet been entirely elucidated. It is still uncertain whether we are to consider the four cardinal symptoms—exophthalmos, enlargement of the thyroid, tachycardia, and tremor—as due to a common cause, or to regard any one of them, in particular the second, as primary. The investigations of Murray and others have shown that the histological appearance of the thyroid in this affection is similar to that seen in a lobe of the gland which has hypertrophied as the result of excision of the other half. It is more embryonic in character and, it may be added, approaches somewhat the parathyroidal type of structure. Colour is hence lent to the view that the remaining symptoms of exophthalmic goitre result from the escape into the circulation, by the process of internal secretion, of an excessive amount of the active principle of the thyroid juice. Ballet and Enriquez and Edmunds have shown that the injection of excessive quantities of thyroid extract into animals evokes all the typical symptoms of Graves' disease, with (in the case of Edmunds' dogs) a fatal issue. The former two observers describe the enlarged thyroid in these experiments as being abnormally vascular, to some extent sclerotic, and with diminished permeability of the lymphatics, changes agreeing with those recorded by Renaut in exophthalmic goitre.

But however correct this explanation may be, it cannot be the whole truth. In the first place it only throws the difficulty back a stage, as it offers no suggestion as to the primary cause of the thyroid affection. Secondly, it does not account for the cases in which the thyroid is not increased in size. Moreover the effects of removing part of the thyroid in Graves' disease are contradictory, and on the whole unsatisfactory. Then again, in view of the structural alterations in the gland, it is improbable that its secretion in this condition is of normal quality, so that the result of experiments based upon feeding or injection with its physiological extract ought not to be transferred straight away to the explanation of disease. Still, the balance of present evidence tends unquestionably to support the view that the symptomatology of exophthalmic goitre results from

an auto-intoxication by products of increased and perverted thyroidal activity. Like all other chronic poisons, this attacks chiefly the nervous system, and many of the symptoms of the disease can be explained by perversion of the functions of the medulla oblongata. The part played by the sympathetic is probably quite secondary, as Edmunds has proved by interesting experiments, and Abadie's suggested cure by **Cutting this Nerve** on both sides has not proved a success.

An objection which has been urged against the auto-intoxication theory, is the undoubted fact that exophthalmic goitre may develop suddenly after a fright, or more often a spell of mental over-exertion. But it must be remembered that the nervous manifestations of chronic poisoning, such as uræmia, mercurial tremor, or saturnine wrist-drop, may develop quite suddenly, although the intoxication be of long standing. Of this an excellent example may be seen in the case of diabetes, wherein after the disease has lasted for years, an attack of influenza, or the fatigue of a railway journey, may precipitate the occurrence of fatal coma.

No satisfactory explanation has hitherto been adduced of the persistence of the thymus in cases of exophthalmic goitre.

Endemic Goitre.—The recent contributions to our knowledge of this disease, which is, it is to be hoped, slowly dying out, can be very briefly summarised. Repin, who has carefully studied the subject in the valley of the Arc, the French headquarters of the disease, believes it to be associated with the presence of calcareous salts in the water, and states that the inhabitants of houses which employ sand filters escape. Rosinski has shown that the thyroids of Austrian cretins contain less iodine than normal. Repin recommends preventive treatment by giving **Iodides** as soon as the goitre commences to develop. Bruns and Gaide claim to have had excellent results with the administration of **Thyroid Extract.**

The Supra-renal Capsules.—The fact that a fatal disease characterised by pigmentation of the skin and great asthenia was associated with tuberculous disease of the supra-renal capsules, was published in 1855 by Addison. But caseous degeneration of these organs may occur without melanoderma, and typical pigmentation may appear when they are sound, particularly in connection with degeneration of the sympathetic nerves. That the supra-renals are essential to life was first asserted by Brown-Séquard, and proved by Tizzoni, who showed that their removal was fatal to certain animals. Stilling found that if one be removed, the other hypertrophies, and Abelous and Langlois completed the chain of evidence by saving the

lves of decapsulated animals by supra-renal grafting. It is hence concluded that Addison's disease is due to the accumulation of a poison in the blood, owing to the suspension of the functions of the supra-renal capsules. That this poison exercises a specific effect upon the sympathetic nervous system seems probable, as Boinet found gross lesions thereof in two-thirds of the animals from which he had removed the capsules. Abelous and Langlois showed that the blood of such animals contained a poison which acted like curare upon the end-plates of the motor nerves.

The physiological action of supra-renal extract was first thoroughly studied by Schäfer and Oliver. They found that its injection caused a transient but extremely well-marked rise of blood pressure, which by a process of exclusion they showed to be the result of a direct action upon the smooth muscle in the arterial walls. The active principle is extremely powerful, even in minute doses. Certain of its properties have suggested to Mühlmann and others that it may be allied to pyrocatechin. Supra-renal extract has proved of but little service in the treatment of Addison's disease; it has occasionally been of use in exophthalmic goitre. In this disease I have had one striking success, several moderately satisfactory results, and a few complete failures with the remedy.

Schäfer and Oliver have shown that the supra-renal extract obtained from cases of Addison's disease has lost its tonic influence on the vascular system; this has also been found to have happened with the extract of the enlarged glands seen in certain fevers, such as diphtheria, but in typhoid the supra-renal extract has retained this property. The part played by the glands in the formation of natural antitoxins cannot be discussed here, nor have we space to do more than allude to the hæmorrhages seen in them in certain infective diseases of children.

Jacoby has carefully studied the relations of the supra-renals to the intestinal functions, and has thus thrown some light on such early symptoms of Addison's disease as constipation, diarrhœa, and vomiting. He finds that irritation of the organs through their nerves slows intestinal peristalsis and diminishes the flow of urine, while their removal is attended by a vigorous increase in peristaltic action. Still more interesting are the recent researches upon the relations between the supra-renals and corpora lutea. The appearance of the cortical cells of the former much resembles that of the large plasmatic elements of the latter. Embryological investigation explains this by the discovery that both are derived from peritoneal epithelium. There is, moreover, a certain amount of evidence that

the supra-renals may hypertrophy when the ovaries atrophy. A physiological identity does not, however, exist, for ovarian extract does not raise the blood pressure. Another interesting embryological point is that the supra-renal capsules only develop normally if the brain is intact; an embryonic cerebral deficiency entails mal-development of the supra-renals.

The Pancreas and Diabetes.—It would lead us too far to enter here into the still vexed general question of the pathology of diabetes, though I hope on a future occasion to revert to the subject. Recent research has, however, been much concerned with the relation of the internal secretion of the pancreas to this disease, with many interesting results. Though pancreatic disease had been observed in a case of diabetes by Cowley, as long ago as 1788, it was not until 1889 that the relation between the two was definitely established by the famous observation of V. Mering and Minkowski that dogs from which the pancreas had been removed died with all the symptoms of diabetes. Further investigation showed that absolute removal of the whole pancreas was necessary to produce this effect, tying the duct or injecting paraffin being ineffectual. The glycosuria can be prevented by grafting fresh pancreas into the abdominal cavity, but not by feeding with it. There is evidence tending to associate a certain proportion of cases of human diabetes with disease of the pancreas, and the experimental evidence just quoted shows that the causative factor must be absence of the internal secretion of this organ.

Two views have been put forward as to the function of this internal secretion. One holds that it promotes the formation of glycogen in the liver, and thus aids the accumulation of carbohydrates in that form, instead of their dissipation as sugar. According to the other, the pancreatic internal secretion contains a ferment (glycolysin, hépine) which causes the destruction of sugar in the tissues. Pancreatic failure would thus entail in the one case, deficient hepatic glycogenesis, in the other, increased somatic glycolysis. Have we any evidence in favour of either of these views? To my mind everything points to the influence of the pancreas in this respect being exerted through the liver. In the first place the veins and lymphatics of the pancreas all drain into the liver, so that any substance passing out through them is, so to speak, laid on to the liver direct. Then we have the undoubted fact that in grave forms of diabetes—and pancreatic diabetes is usually severe—there must be increased sugar formation, and that not only from carbohydrates, but also from the body proteids. Thus a patient taking virtually no carbo-

hydrates, may excrete half a pound of sugar a day, and that this is formed from the tissues is shown by the wasting and the increased nitrogenous content of the urine. Still more direct evidence is afforded by the fact that in experimental pancreatic diabetes glycogen disappears from the urine, while in frogs at any rate, extirpation of the pancreas is not followed by diabetes if the liver be previously removed (Marcuse). In dogs from which the pancreas has been removed, the liver undergoes intense fatty degeneration. It thus seems highly probable that the influence of the internal secretion of the pancreas upon diabetes is exerted through the liver.

Tuckett has recently put forward another theory, which is, so to speak, still on trial, but does not explain all the facts observed by Gaglio in connection with the relation between the pancreas and the thoracic duct. Tuckett states that after a meal the lymph of the thoracic duct contains a substance which when injected into the portal vein causes glycosuria, and holds that the function of the internal secretion of the pancreas is to neutralise this substance.

The Pituitary Body.—Our present state of knowledge with regard to the internal secretion of the pituitary body is still unsatisfactory. It is not certain whether, as at one time believed, its absence is the cause of acromegaly. Marinesco and others have removed it, and death has followed, but rapidly and with mainly nervous symptoms. The fact that the pituitary hypertrophies in myxœdema has been supposed to indicate a complementary function as regards the thyroid, but the experiments of Schäfer and Oliver negative this. They find that injection of pituitary extract increases the heart-force, but not its rate. The blood pressure is raised (thyroid injection produces exactly the opposite effect), and this is due not only to the action on the heart, but also in part to contraction of the arterioles. Schäfer concludes that the pituitary body exerts an influence in increasing the contraction of the heart and vessels, and perhaps in regulating the nutrition of the bones and nervous system.

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MIGRAINE. *Græme M. Hammond, M.D., New York.*

Whitehead[1] makes the encouraging statement that for twenty-five years he has never failed to cure the most inveterate and severe cases of migraine by the introduction of an ordinary **Tape Seton** through the skin on the back of the neck (see p. 56). Some very severe cases are detailed in which the cure seemed to be permanent.

Thomson[2] contributes a very interesting article on the "Pathology and Treatment of Migraine." He discusses fully whether the disease is to be regarded as a nervous affection or a toxæmia. In favour of migraine being due to a specific derangement of some part of the nervous system, the predominence of purely nervous symptoms is cited. The severity of the pain; the peculiar derangements of vision; the common limitation of the headache to one side; the mental sluggishness which accompanies it; and the frequent radiation from the head to the extremities of various sensory disorders analagous to like symptoms in affections of the central nervous system, have led many authors to regard it as the manifestation of a faulty nervous organization. The undoubted fact that migraine is more distinctly hereditary than any other nervous disease, or, in fact, than almost any disease, is held to be strongly corroborative of the supposition that it is caused by an original constitutional defect in nerve nutrition. The primary seat of this defect is variously surmised, though many writers hold that it is the sympathetic nervous system which is chiefly involved. It cannot be ranked among the degenerative nervous diseases, like trigeminal neuralgia, which comes on late in life, for migraine is not only a disease of youth and of the prime of life, but it actually declines and generally ceases after fifty. Nor can its victims be called degenerates compared with their fellows. On the other hand there are whole classes of persons who never have migraine. Those who do not have it are sailors, agriculturists, miners, truckmen, carpenters, and all out-door labourers without exception. Those who do have migraine are clergymen, students, professional men, brain and not muscle workers, housewives, shop girls, needlewomen, and indoor people generally, and therefore, more commonly women.

There is certainly no accounting for two such opposing lists by class differences in cerebral organization or in their sympathetic ganglia. But there is a great class difference which is as unmistakable as it is significant, *viz.*, in the physical habits of life, or, to be more precise, in those physical habits which most affect the portal circulation. This portal circulation is necessarily the weakest in its share of the propulsive power of the heart of any department of circulation of the body, and the most dependent, therefore, on adjuvants external to itself. By far its most important adjuvant is the powerful mechanism of the muscles of respiration, especially the diaphragm and the abdominal muscles. These greatly increase the flow of the biliary secretion. Now, add to this that both the pulse force and the frequency of the general circulation fall at once in a sedentary compared with a slanting posture, let alone the greater change still from general exercise, and there cannot but be the most material difference between the portal circulation of the farm labourer, strongly compressing and relaxing all his abdominal muscles in deep breathing while at work, and the relatively total inaction of the same muscular apparatus in the brain worker at his desk, or the needlewoman at her sewing. Stasis in the liver involves stasis in the entire gastro-intestinal tract and that, in turn, implies both imperfect digestion and chronic constipation. Modern research is increasingly demonstrating the poisonous properties of the products of imperfect digestion, and, what is more, has experimentally proved that some of these products are exclusively nerve poisons. There are many observations which also go to show that one of the great functions of the liver itself is to neutralize gastro-intestinal nerve poisons, so that, when its functions are experimentally interfered with, prompt poisoning with distinctively nervous symptoms follows. In short, there is not a headache, nor a neuralgia, nor a vaso-motor derangement, familiar to us among the symptoms of migraine, which cannot be produced by poisons manufactured in our laboratories out of the elements of our daily food, by subjecting those foods to conditions similar to those present in abnormal digestion in the alimentary canal.

The fact that migraine is notably a hereditary or family complaint, is accounted for easily on the toxæmia hypothesis by the parallel fact that there is nothing so hereditary as peculiarities of digestion and of indigestion.

In regard to the antitoxic treatment of migraine the first consideration is that of prophylaxis. All severe cases without exception, are chronic dyspeptics, and of this one of the commonest symptoms is chronic constipation. A mercurial laxative such as a 5-grain

Blue Pill at night, with a saline in the morning to secure its action, is a weekly prescription which the author strongly insists upon in every case, to be kept up for months together. This is a most certain intestinal antiseptic. As a further systematic measure for this purpose, he prescribes from 1 to 2 drachms of the **Sulphate of Soda,** with 10 grains of **Sodium Salicylate** in a tumbler of hot water, to be sipped down every morning on rising. Then, half an hour before each meal, a pill is prescribed of $\frac{1}{20}$ of a grain of **Bichromate of Potash,** with 3 grains of **Bismuth Subcarbonate.** Half an hour after meals and at night, full doses of intestinal antiseptics in the form of 10 grains of **Phenol, Bismuth,** or **Naphthol Bismuth,** with 10 grains of **Ammonium Benzoate** or **Sodium Benzoate,** are given in two capsules. While the benzoates are among our best intestinal antiseptics, yet our prescriptions of that nature ought to vary in different cases or at different times in the same case. Thus, not uncommonly, the signs of intestinal derangement include diarrhœa instead of constipation.

Prophylaxis is the main indication in the treatment, but for the attacks themselves, when severe, the fluid extract of **Ergot** given in drachm doses, with a drachm of the elixir of **Cinchona** in water, by stomach or by rectum, is the most certain agent to cut the attack short. The patient should lie perfectly still after taking it, till all pain passes off, and in some cases the dose may be repeated after two or three hours.

In those who cannot take the ergot without vomiting, he relies on 10 grains of **Lactophenine** with 2 grains of **Citrate of Caffeine,** repeated every two hours until relief occurs; or 15 grains of **Antipyrine,** always with a teaspoonful of aromatic spirits of ammonia.

Diet is a matter of great importance. In every severe case the red meats should be abstained from altogether, or, at least, never taken at night. In other respects the digestive abilities and inabilities of each patient must be individually studied. Whatever is indigestible for any person is by that person to be avoided.

All functional nervous diseases have their exciting causes as well as their permanent causes. The commonest exciting cause of migraine is overtaxation of the nervous system, whether by thinking or by feeling, and likewise by undue exertion of the voluntary muscles. On this account migraine belongs to the worrying and restless period of life, and then declines with the greater repose of old age. Cases of persistence of migraine in elderly persons seem always connected with continuance of causes of mental anxiety and depression. It is in them we have to fear the development of melancholia, and

against that malady he knows of no better prophylactic than the measures for intestinal antisepsis already outlined.

REFERENCES.—[1]*Med. Jour.*, Feb. 9, 1901 ; [2]*Med. Rec.*, Nov. 16, 1901.

MORPHINE HABIT. *Græme M. Hammond, M.D., New York.*

Ahlborn[1] reports several cases of the morphine habit successfully treated with **Heroin.** One patient was taking 12 grains of morphine daily. The morphine was entirely withdrawn, and heroin tablets of $\frac{1}{12}$-grain each were substituted for each $\frac{1}{2}$-grain of morphine, The patient thus had 2 grains of heroin daily, and under this treatment he was gradually freed of his cravings for morphine and slept well. At the end of a month the craving for morphine was quite gone, and the dose of heroin was then reduced to 1 grain daily without any unfavourable symptoms following. A month later it was reduced to a quarter of a grain daily, and subsequently was discontinued entirely, only tonics being given. Two other cases were similarly treated and with success.

Randel[2] has had equally good success with heroin. He refers to a patient who was taking 3 grains of morphine daily. He began with an injection of $\frac{1}{4}$ of a grain of heroin. This produced a sense of comfort, but did not give sound sleep. The dose was therefore increased with very satisfactory results. A day or two later the remedy was discontinued, but had to be resumed again on account of the collapse of the patient. At the end of another week, however, it was again discontinued with no consequent ill effects, and the patient was soon restored to health.

REFERENCES.—[1]*Brit. Med. Jour.*, Aug. 10, 1901 ; [2]*Treat.*, Nov., 1901.

MYCETOMA. *James Cantlie, M.B., F.R.C.S.*

Madura Foot—mycetoma—has been described as occurring in Havana, Cuba, by Desvernine and Albertini,[1] and in Costa Rica by Calnek.[2] Debayle reports having seen many cases in Nicaragua.[3] The observations are important, as hitherto descriptions of the disease from America, both north and south, have been inconclusive. In the Havana cases, however, the parasite—the streptothrix madura—has been found and described, and preparations of the parasite have been exhibited. In the countries referred to the enlargement of the foot attendant upon mycetoma have been termed elephantiasis, but Calnek now holds that in Costa Rica elephantiasis due to filariasis is rare compared with the elephantoid conditions associated with madura foot.

REFERENCES.—[1]*Med. Rec.*, Feb. 25, 1901 ; [2]*Ibid.* ; [3]*Ibid.*

PLATE XV.

MYCOSIS FUNGOIDES.

Early stage.

PLATE XVI

MYCOSIS FUNGOIDES

Later stage.

MYCOSIS FUNGOIDES. *Norman Walker, M.D.*

In a recent number of the *Annual*, under the heading "Granuloma Fungoides," was figured an example of this disease, in which the tumour formation was very marked. *Plates XV* and *XVI*, which are prepared from photos of a case under the care of Dale James, and kindly lent by him, show the disease in its less easily recognized form. *Plate XV* shows it in the early stage, where large areas of infiltration were present, while *Plate XVI* is taken from the same case sixteen months later, and a fortnight before the patient's death. It shows the broken down, ulcerating, fungating surface.

In any extremely chronic circumscribed dermatitis, associated with considerable itching, the possibility that one is dealing with the early stage of this malady should be kept in view.

MYOSITIS OSSIFICANS (Traumatic).

Priestley Leech, M.D., F.R.C.S.

Rotschild[1] describes two cases of this disease. One was due to ossification in the brachialis anticus, after the passage of a waggon over the arm and thorax; in the other case ossification took place in the tendo achillis, starting from the os calcis. A summary of twenty cases is given. The distinguishing feature from the non-traumatic form is the nature of its isolated appearance; multiple foci usually being present in the latter form. It might be confounded with myositis syphilitica. The prognosis depends upon the connection of the periosteum with the bony mass; if there is no connection, no recurrence need be feared. To guard against recurrences, the entire muscle, and not only the bony mass, is to be removed. Remove the healthy periosteum about 1 centimetre round the growth; the exposed bony surface is to be freed of all osteophytes, as well as of pathological tissue in the compact layer of bone.

REFERENCE.—[1] *Beitrage z. klin. Chir.*, bnd. xxviii, hft. i.

MYXŒDEMA. (See also "Metabolism.") *R. Hutchison, M.D.*

Murray[1] has summarised his experience of the use of **Thyroid Extract** in various diseases. He recommends the employment of one or other of the officinal preparations—thyroideum siccum or liquor hyroidei. Six minims of the liquor are the equivalent of one grain of the dry preparation. The liquor should be prescribed undiluted, the dose being measured out in minims, and water added at the time it is taken. It is advisable to obtain a fresh supply once a fortnight. Dry thyroid may be prescribed in either a powder, pill, or tablet.

The treatment in myxœdema may be divided into two stages.

In the first we have to get the patient well; in the second to keep him so. In the first stage it is advisable to keep the patient in the house, or even in bed. Three minims of the liquor or half a grain of the powder each night at bed time is sufficient for the first week. If this dose is well borne, it may be gradually increased up to ten or twelve minims of the former preparation, or two grains of the latter, by the end of the second or third week. This dose may be continued till the second stage is completed. The second stage lasts for the rest of the patient's life. Ten minims of the liquor should be taken each week-day at bed-time.

REFERENCE.—[1]*Pract.*, April, 1901.

NEURALGIA, TRIGEMINAL. *Robert Abbe, A.B., M.D., New York.*
W. Scott Schley, A.B., M.D., New York.

Horsley,[1] in a recent lecture upon trigeminal neuralgia, strongly advocates the Hartley-Krause operation as *the* scientific operation for this condition, and one that ought to be performed at once where the disease is intractable to ordinary remedies and affects more than one branch of the nerve. If one branch only is affected, it is permissible to try one of the minor operations first, but usually there will be a recurrence. Krause has done the operation thirty-one times with but one death; Horsley has done it twenty-one times with two deaths (one occurring two months after operation, from infection). He has operated upon four patients over eighty years of age. Horsley and Krause have reported no recurrences of pain; Krause has cases dating back to 1892 and remaining well. Horsley prefers the intracranial operation, and says it "should be performed in preference to any other treatment." He does not find it necessary to ligate the middle meningeal artery. J. Dollinger[2] also reports a method of removal of the ganglion without ligature of the vessel. He found, by a study of the anatomical relations of the parts in one hundred skulls, that the position of the middle meningeal artery and the foramen spinosum in regard to the second and third divisions of the nerve, makes it possible in about 94 to 96 per cent. of the cases to remove the ganglion by traction of the roots to the anterior or posterior position of the artery, and cutting them thus. He claims the saving in time and diminished danger of hæmorrhage. He averages about half an hour for the operation. He employs a small electric reflector, retracting the brain with his left hand and separating the dura, etc., with his right. J. C. Renton[3] reports two cases in which he was able to leave the ophthalmic branch of the nerve to prevent eye symptoms. He also was able to operate without ligating

the artery. J. W. White[4] also prefers to leave the ophthalmic branch, particularly as primary and exclusive disease of the first division has never been known to occur.

There is a very general sentiment among those doing the operation that it should be undertaken *earlier*, while the patient is in better condition, than later, as is more usual, as a last resort when physical tone is lowered and mortality necessarily higher. The operation is such a radical and complete cure in intractable cases, that it is certainly growing in favour, notwithstanding the high mortality of 15 to 20 per cent (for all operators) up to the present.

REFERENCES.—[1]*Med. Pub. Co.*, London; [2]*Med. Press*, Dec. 19, 1900; [3]*Brit. Med. Jour.*, Nov. 17, 1900; [4]*Phil. Med. Jour.*, Mar., 1901.

NEURITIS, MULTIPLE. *Græme M. Hammond, M.D., New York.*

At a meeting of the New York Academy of Medicine held Nov. 6, Starr[1] read a paper on the causation of multiple neuritis. The toxic causes from poisons outside the body were metallic and non-metallic. The former were arsenic, lead, phosphorus, and mercury. The latter were alcohol, coal gas, bisulphide of carbon, and the coal-tar products. In regard to arsenic, cases were on record, and had come under his own observation, in which neuritis had resulted from the use of toilet powders containing arsenic, and from the inhalation of arsenic from wall paper. An epidemic of arsenical neuritis had been observed in England in which the arsenic had been introduced into the system in beer. Arsenic being commonly found in copper, it was not surprising that workers in copper are apt to become poisoned with arsenic.

Physicians practicing in districts where pottery is made should be on their guard for cases of neuritis arising from lead poisoning. Lead is sometimes dissolved out of the glaze of earthenware and may then poison the food.

He thought it not unlikely that many of the nervous symptoms observed in those working in match factories are the result of poisoning with phosphorus.

Poisoning with mercury was very common when mirrors were manufactured in the old way. In making silk hats, nitrate of mercury is used in England. This often caused multiple neuritis. He had never seen mercurial neuritis arise from the medicinal use of mercury.

The writer would here call attention to that form of mercurial poisoning commonly seen in those who prepare the fur to be used in the manufacture of felt hats. A preparation is used called "carrott," which is largely composed of mercury. It induces tremor,

weakness, and sometimes pain in the upper extremities. It is rarely the case that anyone who works with "carrott" any length of time escapes the disease.

Alcohol in any form might produce neuritis. In some persons susceptible to it, very small quantities might develop it. He had known of one case of neuritis occurring in a woman from sipping cologne. Neuritis from this cause was more commonly seen among the higher classes, and in those whose nervous organization is more highly developed, than in the lower and more phlegmatic class of people.

Coal gas, when inhaled, may cause a very severe form of multiple neuritis. Natural gas may produce the same effect.

Bisulphide of carbon sometimes caused neuritis in those who work in rubber factories and inhale the fumes from it.

It had been stated that such coal-tar products as antipyrine, acetanilide, trional, chloretone, and sulphonal, might give rise to neuritis.

Neuritis from Toxæmia.—In this class were included all cases due to the development in the system of some bacterial poison. Neuritis occurred as a sequel to diphtheria, pharyngitis, grippe, typhoid and typhus, scarlet fever, measles, mumps, whooping-cough, small-pox, pneumonia, erysipelas, gonorrhœa, puerperal fever, and septicæmia of any origin. It might also include beri-beri, and leprous neuritis. Since the general use of antitoxin in diphtheria, the number of cases of neuritis following that disease had been decidedly less. Neuritis following grippe was very slow in recovering. Many cases following typhoid might be due to the free and prolonged use of alcohol.

Neuritis and Dyscrasias.—A class of cases of neuritis exists due to some other disease of the body, such as tuberculosis, rheumatism, diabetes, gout, carcinoma, and arterio-sclerosis. In diabetic patients local neuritis is common, but multiple neuritis is seldom seen. It is probable that syphilis is not a common factor in the causation of multiple neuritis, though it may be of localized neuritis. Dana divides neuritis into three classes: (1,) Those due to toxic causes; (2,) Those due to dyscrasias; (3,) Those due to infection. Nearly all the toxic cases were those in which the whole nerve is involved, causing both motor and sensory symptoms. Cases due to infection, especially to diphtheria, were largely of the motor type. Those caused by dyscrasias, such as rheumatism, gout, and diabetes, were mainly of the sensory type. He believed that the excessive use of tobacco, coupled with a moderate use of alcohol, could cause neuritis.

In women, excessive tea-drinking was a cause, and the use of morphine, cocaine, and other narcotic drugs, predisposed to it. Alcohol was the cause in about two-thirds of the cases he had seen. He does not believe that there is any such thing as a rheumatic multiple neuritis, and it was only very exceptionally that gout caused it. Suchs thinks there is an unfortunate tendency to make the diagnosis of alcoholic multiple neuritis on insufficient grounds. Such a diagnosis should not be made unless there were other symptoms of chronic alcoholism. He had seen malarial multiple neuritis in children who lived in swampy malarial districts. In these cases the malarial plasmodium had been found in the blood, and there had been present the usual symptoms of malarial poisoning. He had seen one case of syphilitic multiple neuritis, who was cured by mercurial and iodide medication. Peterson points out that in alcoholic multiple neuritis there is often a peculiar mental condition characterized by a loss of the sense of time and place. Some years ago he reported three cases of acute mania occurring in rubber workers from poisoning with the bisulphide of carbon. He has seen two cases of arsenical multiple neuritis develop from the use of eight or ten drops of Fowler's solution of arsenic three times a day.

Collins regards diabetic multiple neuritis as comparatively common. He has seen several cases of tuberculous neuritis in which the autopsy had shown no characteristic lesion. After long search and extensive experience he had failed to find any disease produced by tobacco, with the possible exception of arterio-sclerosis. He has seen three cases of neuritis in snuff takers. On investigation, he found the snuff had been packed in lead. Knapp has seen one case in which there was paralysis of several of the ocular muscles from coal-gas poisoning. He questioned the accuracy of the term "neuritis" in such cases. There was no histological foundation for the belief that it is a neuritis. Tobacco amaurosis was characterized by atrophy, not preceded by congestion or any evidence of inflammation; it was an atrophy just as is seen in tabes. He has not been able to convince himself that gout exerts any influence in causing diseases of the eye, but he has certainly seen distinct optic neuritis develop after grippe.

REFERENCE.—[1] *Med. Rec.*, Nov. 16, 1901.

NOSE (Diseases of). (See also "Rhinitis," "Polypus," etc.,

W. Milligan, M.D.

Application of the Galvano-Cautery.—Beaman Douglass[1] after a careful study of the effects of the application of the **Galvano-cautery** to the nasal mucosa, has come to the following conclusions: The

cautery is a destructive element even more powerful than the knife. It destroys physiological tissue as completely as if it were removed from the body. Its effects extend, unlike those of the knife, to a region beyond its limit of application. It is subject to all the dangers of surgical accident which come from using the knife, with the single exception of hæmorrhage. Besides the ordinary surgical dangers, it has special dangers of its own, *e.g.*, furnishing a nutrient pabulum for bacterial growths. In special and selected cases, and in the hands of a careful operator, it may accomplish its legitimate work better than can be done by cutting methods.

Chronic Nasal Catarrh.—Gleason[2] recommends cleansing with a simple alkaline solution, and applying two or three times a week the following :—

R	Iodi	gr. v	Glycerini	℥j
	Pot. Iod.	gr. xv		

And subsequently applying as a protective :—

R	Menthol	gr. v	Albolene	℥ij
	Camphor	gr. xx		

Deflections of the Septum.—E. J. Moure[3] first of all removes any spur or thickening of the septal cartilage, until nothing but the deflection is left. Subsequently he makes an incision along the line of insertion of the septum parallel to the floor of the nose, and extending from just behind the vestibular portion of the septum to the vomer. Another incision is made along the bridge of the nose. In this way a triangular plate is formed which can be easily moved about. A nasal dilator—one blade rigid, the other soft—is passed into the nasal cavity, the soft blade being introduced upon the convex side. A special pair of forceps is now introduced, and the septum is forced into a median position. The dilator is left *in situ* for about a week, during which time complete union of parts should take place. Inflammatory reaction is combated by irrigation with sterilised boracic solution.

Nasal Tuberculosis.—F. J. Steward[4] publishes the records of six cases which he has observed, and gives an analysis of ninety-four previously recorded instances of the disease. Fifty-nine of the patients were females, forty-one were males. The majority of the cases occurred in patients of from twenty to thirty years of age. In fifty-eight cases the nasal disease was primary ; in thirty-seven, secondary, and in five doubtful whether primary or secondary. In 89 per cent of the cases the septum was involved. The disease occurs in the form of granulomata, or of various sized ulcers. Curettage and the application of strong solutions of **Lactic Acid** are recommended by way of treatment.

Texier and Bar recognise three main forms : (1,) A pseudo-polypoid form ; (2,) An ulcerative form ; (3,) A granular form. They also recommend free curettage of the affected part, followed by the application of an 80 per cent. solution of lactic acid, and attention to the state of the general health.

Naso-pharyngeal Adenoids.—Latent Tuberculosis.—Rethi[5] examined 100 cases. In six tuberculosis was found, cheesy degeneration being present in two of the six cases. In all giant cells were found. In five the tuberculous deposit was near the surface ; in one, in the deeper layers of the vegetation.

Furniss Potter[6] reports the case of a woman of forty-seven, suffering from persistent naso pharyngeal adenoids, with deafness. The growths were removed with forceps, and on microscopic examination showed adenoid tissue with chronic inflammatory changes.

REFERENCES.—[1]*New York Med. Jour.*, June 26, 1900 ; [2]*Med. Rec.*, Aug. 4, 1900 ; [3]*Jour. Laryng.*, Nov., 1900 ; [4]*Guy's Hosp. Rep.*, vol. liv ; [5]*Wien. klin. Rundsch.*, No. 26, July 1, 1900 ; [6]*Brit. Med. Jour.*, June 9, 1900.

OBESITY. *R. Hutchison, M.D.*

Ebstein[1] gives an account of seven observations made by himself, concerning the results of **Thyroid** treatment. Commencing with small doses (usually 0·6 gramme of the gland was administered daily), he obtained diminution of weight in one case of 6½ pounds in the first week, but the treatment was accompanied by a special diet. He does not regard the effect of the gland as altogether salutary, owing to such accidents as palpitation, vertigo, and glycosuria. He concludes in general that the usual treatment of obesity leaves much to be desired, and is not rational ; that obesity may be treated without the aid of thyroid medication, and that it is imprudent to adopt the latter treatment without the advice of a physician.

REFERENCE.—[1]*Deut. Med. Woch.*, Jan. 14, 1899.

ORCHITIS. (See "Testis.")

ŒSOPHAGOTOMY. *Priestley Leech, M.D., F.R.C.S.*

The impaction of a foreign body in the œsophagus is a serious matter, and it cannot be too often insisted upon that it always calls for interference. The foreign body may pass on into the stomach, or be voided per anum after a longer or shorter period of fixation ; or if small it may pass through the walls of the œsophagus and migrate in a most erratic manner ; it may become encysted, or may form an abscess, which bursts into the neck or the posterior mediastinum. As a rule death follows serious unrelieved cases ;

ulceration into the aorta or one of its branches, with consequent fatal hæmorrhage, is one of the dangers. Heaton[1] records five cases of impaction of foreign bodies in the œsophagus. He points out that the best way of treatment is extraction through the mouth by coin-catcher, horse-hair, probang, etc. If this fails we may: (1,) Push the substance downwards into the stomach (this should only be done if the body is soft in consistence). (2,) Adopt œsophagotomy and direct extraction through the wound. (3,) If impacted in the thoracic part of the œsophagus, abdominal section, opening of stomach, and extraction through the cardiac orifice. Œsophagotomy is not an unsuccessful operation, though the death rate has been put at 23 per cent., septicæmia being one of the most frequent causes of death. In most cases the incision in the œsophagus is better left unsutured.

REFERENCE.—[1] *Birm. Med. Rev.*, May, 1900.

PANCREAS (Surgery of).

Walter G. Spencer, M.S., M.B., F.R.C.S.

Chronic Pancreatitis.—In last year's *M. Annual* (1901, p. 402) an abstract is given of Mayo Robson's paper read at the Paris International Congress, as well as of some other cases of chronic pancreatitis.

Acute Hæmorrhagic Pancreatitis.—The diagnosis of acute hæmorrhagic pancreatitis can rarely be made during life, for its especial features, *viz.*, acute pain in the epigastrium, with vomiting and marked collapse and cyanosis, may give rise to the diagnosis of gastric perforation, whilst the signs of biliary obstruction may direct attention to the gall ducts.

The fact that micro-organisms are not met with, and also the bad results of surgical measures, only two surviving out of twenty-five cases submitted to operation, both point towards an expectant line of treatment until suppuration has evidently set in. Yet, owing to difficulties as to diagnosis, it may be thought proper to explore, lest a gastric perforation or gall-stone escape notice. If acute hæmorrhagic pancreatitis be met with, the operation should be terminated as quickly as possible by inserting a strip of gauze. When it is followed by the formation of an acute abscess, this may be regarded as a secondary infection by staphylococci or the colon bacillus. When the suppuration is diffuse, operative treatment is hopeless.

Mayo Robson[1] notes a case in which the abscess discharged spontaneously into the bowel, and recovery followed. Only when the

suppuration is partially circumscribed can a reasonable prospect of success attend laparotomy.

Pancreatic Abscess.—Faure[2] describes a case in which an epigastric swelling followed an acute fever. Laparotomy was done on the ninth day, and an abscess found among adhesions. Recovery followed, with a fistula which discharged pancreatic fluid freely.

Pancreatic Cysts.—Some have considered these obstruction cysts, "pancreatic ranulæ." Cysts containing altered blood appear to arise in the milder type of acute hæmorrhagic pancreatitis. The general plan of treatment has generally been simply to incise and drain, but the more satisfactory method is to excise if possible. A case was recently put under me by Dr. Addison, of Colchester, and by Dr. de Havilland Hall. He was a strong and healthy man, of sixty-five, who thirty years before had had an acute attack of "inflammation of the liver," after which there always remained a lump in the situation of the cyst. This had evidently been an acute hæmorrhagic pancreatitis, following which the blood had become encysted. A few months before the operation the cyst had begun enlarging, until it nearly filled the abdomen. The cyst was full of aseptic, chocolate-like material, altered blood without any pancreatic ferment, enclosed in a universally adherent unilocular cyst, with thick walls studded with calcareous plates. The liver was above, the stomach above and to the left, the transverse colon below. The cyst was shelled out without difficulty except where it was embedded in the head of the pancreas. There much venous hæmorrhage arose, which being controlled by ligatures, the abdomen was completely closed, and the patient recovered without a bad symptom.

Coombes and Nash[3] give a short account of the cases of pancreatic cysts which have been published.

Multilocular Cystic Tumour of the Pancreas.[4]—As distinct from the unilocular cysts, tumours are met with very like ovarian cysts. The cysts are lined with cylindrical or polygonal epithelium, and into some of the cysts project intra-cystic papillary outgrowths. The cysts vary much in size, one usually increasing rapidly until the others almost come to be buried in its wall. Some have apparently existed for years, and in such the tumour is supposed to arise in consequence of an obstruction of the pancreatic duct. No sharp line can be drawn, on the other hand, between such a multilocular cyst, a proliferating cystadenoma, and a cystomatous carcinoma. The intercystic tissue may be densely fibrous, but scattered amongst the fibres may be irregular groups of typical epithelioid cells. The subsequent course of the case may prove such a tumour to be really

a cystic carcinoma. These tumours always require excision, being quite unsuitable for drainage.

Cancer of the Pancreas.[5]—The signs generally given, jaundice and fatty stools, pyloric or duodenal stenosis, and malaria, are conditions generally seen when all hope of removal is past. Pain and the presence of a palpable tumour are earlier signs which should lead to an exploratory operation. Frank[6] succeeded in removing the whole pancreas for cancer. Tricomi[7] excised an adenocarcinoma from the tail of the pancreas. The patient recovered, to die four months later from a metastatic growth in the liver.

REFERENCES.—[1]*Lancet*, 1900, ii, July 28, p. 235 ; [2]*Cent. f. Chir.*, 1901, p. 390 ; [3]*Lancet*, 1901, i, p. 1,825 ; [4]Fitz, *Amer. Jour. of Med. Sci.*, 1900, vol. cxx, p. 184 ; [5]Zoja, *Cent. f. Chir.*, 1900, p. 517.; [6]*Brit. Med. Jour.*, 1901, i. Epit. p. 68 ; [7]*Cent. f. Chir.*, 1901, p. 390.

PANCREATITIS. *R. Hutchison, M.D., F.R.C.S.*

Mayo Robson[1] in an address delivered before the American Surgical Association, discusses the etiology of pancreatitis, the relation between fat necrosis and hæmorrhage, the connection between gall stones and pancreatic disease, and the treatment of pancreatitis generally.

ETIOLOGY.—The immediate cause of the various forms of pancreatitis is bacterial infection, and it may sometimes come on acutely in people in perfect health, though more commonly there is some determining cause, such as biliary and pancreatic lithiasis, gastro-duodenal catarrh, ulcer or cancer of the stomach or duodenum, or some zymotic disease such as typhoid fever or influenza. Of these the most common origin is infection through the duct, arising either from gall stones in the common bile duct, or from gastro-duodenal catarrh. The association of gall stones with pancreatitis is proved by the frequency with which inflammatory enlargement of the head of the pancreas is found in operations for gall stones, and has been specially emphasised by Kennan, Korte, Opie, and Barling, to whose papers references are given.

SYMPTOMS.—As yet no pathognomonic sign of obstruction of the pancreatic duct has been discovered, unless it be rapid loss of weight. Pale stools are frequent, but glycosuria, lipuria, and fat in the fæces occur too rarely to be of diagnostic value. Fat necrosis is a common accompaniment of pancreatic disease, but it is not present in all acute cases, and it has been found to exist in the absence of disease of the pancreas. Hitherto, also, it has only been recognised in the course of abdominal exploration.

Fat necrosis is due to a splitting up of fat into fatty acids and

glycerin. The glycerin is absorbed, but the acids being insoluble, remain in the cells and unite with calcium salts, forming opaque patches of various size in the sub-peritoneal fat, omentum, mesentery, etc. It was first described by Balser in 1882, but has been since investigated by Langelans, Hildebrand, Dettmer, Milisch, Williams, Flexner, Opie, and others. Experiments by Opie, who ligatured the pancreatic duct in cats, go to show that widespread fat necrosis may be expected to follow very rapidly. Flexner and others regard the fat necrosis as a result of the action of the fat-splitting ferment of the pancreatic juice, which has in some way escaped from the duct into the surrounding tissues; but it is difficult on this hypothesis to explain the patches of fat necrosis found at some distance from the gland, *e.g.*, in the pericardial fat, unless indeed it be by the absorption of the ferment and its diffusion by means of the lymphatics.

Hæmorrhage in Pancreatic Disease.—It is well known that local hæmorrhages into the pancreas may occur apart from injury or any general hæmorrhagic tendency, and may come on suddenly in persons in good health. Such hæmorrhages are far more frequent if the pancreatic duct is blocked, and may be the cause of death after operation in such cases.

Mayo Robson now gives **Calcium Chloride** in 30 to 60 grain doses thrice daily by the mouth for a couple of days before operation on such cases, and by enema in 60 grain doses thrice daily for two days afterwards. He finds that this checks the hæmorrhagic tendency quite effectually.

REFERENCE.—[1]*Brit. Med. Jour.*, May 11, 1901.

PARALYSIS AGITANS. *Græme M. Hammond, M.D., New York.*

Williamson,[1] in his paper on paralysis agitans, states that mental worry and anxiety should be avoided, as they markedly increase the tremor. The patient should lead a quiet life, and be spared, as much as possible, from mental excitement of all kinds. Wine, or other alcoholic drinks, strong tea and coffee, must also be avoided. The patient's room should be well ventilated, and he should spend as much time in the open air as possible. Electricity in the form of the faradic bi-polar bath has been recommended by Erb, but the author has found it useless; systematic massage continued for a long time has no good effect, but gentle rubbing upwards gives temporary relief. As regards drugs, he has found arsenic, quinine, iodide and bromide of potassium, strychnine, calabar bean, cannabis indica, caffeine, nitro-glycerin, atropine, nitrate of silver, tannate of cannabin, butyl, chloral hydrate, piscidia, chloretone, heroin, dionin,

and suprarenal extract of no use whatever; but he has seen good results from the administration of **Hyoscine Hydrobromate, Duboisine Sulphate,** and **Hyoscyamine.** Hyoscine hydrobromate should always be given in chloroform water, and Merck's preparation, obtained from Darmstadt, should always be used. A useful prescription is $\frac{1}{100}$-grain hyoscine hydrobromate in 6 ounces of chloroform water. At first two teaspoonfuls may be given, then three, four, and five teaspoonfuls. If necessary, the dose may be increased to six teaspoonfuls ($\frac{1}{60}$ grain), provided toxic symptoms are not produced. It is best given in the morning just after breakfast, and again in the evening just before going to bed.

The author has tried **Duboisine Sulphate** administration by the mouth in two cases. In one case it had little effect, but in the other it decidedly diminished the tremor and restlessness. The dose given was $\frac{1}{60}$ grain in water. **Hyoscyamine Sulphate** had been tried, beginning with a dose of $\frac{1}{60}$ grain, and increasing it up to $\frac{1}{30}$ grain. It diminished the tremor and restlessness, but not so decidedly as hyoscine.

REFERENCE.—[1] *Treatment,* July, 1901.

PEMPHIGUS. *Norman Walker, M.D.*

Van Harlingen[1] believes the best treatment is a local antiseptic to the individual bullæ, for he says that the general symptoms are due to absorption from them.

REFERENCE.—[1] *Therap. Gaz.,* vol. xxv, p. 115.

PENIS (Affections of). *J. W. Thomson Walker, M.B. Ed., F.R.C.S.E.*

Sclerous Infiltration of the Corpora Cavernosa.—This rare affection of the penis is known under several names—fibroid sclerosis, chronic circumscribed inflammation, "indurations plastiques," etc.

On examination of a case a hard, flattened mass is felt occupying the superficial portion of one or both corpora cavernosa. It usually commences in the dorsum and spreads laterally, producing a saddle-shaped mass with well-defined margins. Sometimes, however, it affects one side, and rarely there are several nodules. The affection is painless, and the patient comes complaining of interference with erection. The erect organ may be curved toward the patient's belly, or may be twisted laterally, according to the position of the infiltrated patch. The thickening interferes with the filling of the more distal part of the corpus cavernosum, and in a very severe case only the proximal portion of the organ is erect, the distal part remaining flaccid. No explanation of this sclerotic infiltration of the cavernous body has been discovered. According to one authority 57 per cent.

of cases suffer from gout or diabetes and these conditions are therefore looked upon as predisposing. Neither syphilis nor urethritis seem to be necessary factors in its etiology. Many of the patients remember having suffered from a slight injury at some time, and this may be looked upon as a possible cause.

After extending for some years the process seems to come to a stand-still, but in none of the cases has it resolved either spontaneously or under treatment. The condition is found in men of fifty or over.

Dr. Wolbarst,[1] of New York, describes two cases of this interesting affection. The patients were forty-seven and fifty-five years of age respectively. One had suffered from gonorrhœa, which was followed by a prolonged gleet, and later had a soft chancre ; and the other had had a soft sore many years before, and more recently an attack of urethritis lasting eight weeks. In the first patient the infiltration had begun as a small, hard nodule on the dorsum, and had steadily increased in size without any pain ; the second complained of pain during erection, and a hard mass was discovered on examination.

The diagnosis of the condition is not difficult. These plaques are distinguished from gummata of the cavernous body by the absence of all history and signs of syphilis, and by the effect of anti-syphilitic treatment. Malignant infiltration of the corpus cavernosum is always secondary to epithelioma of the glans or prepuce. It may take the same form as sclerous infiltration, but is much more deeply seated in the corpus cavernosum, and has a rapid course.

Treatment.—The treatment of this affection is very unsatisfactory. Diabetes or gout should be treated if present. Iodides have been administered, but without any benefit, and no improvement seems to follow the use of local counter-irritants.

Lithiasis Preputialis.—Dr. Blodgett[2] records an interesting case which came under his observation. The patient was a man of twenty-two years. He had a neurotic ancestry, and had been an inmate of an asylum about the age of puberty. There was extreme phimosis of a greatly elongated prepuce. The penis was relatively small, but its distal portion was greatly enlarged, elongated, and pendulous, presenting roughly the appearance of a small pear, over which the prepuce was tightly extended. The opening was directed to one side, and on urination the stream was discharged at an angle from the penis. The swelling was very hard, unyielding, and tender. There was a constant, greenish, puriform discharge, with an offensive ammoniacal odour. On slitting the prepuce, a perfect calcareous collar was disclosed surrounding the base of the glans, and filling the

sulcus, except at the frænum. This collar was prolonged upon the glans toward the meatus.

Another similar case, of a man aged forty-five years, occurred in the practice of Dr. Louis.[3] The circumference of the pear-shaped end of the penis was 25 centimetres, and the swelling felt like a bag of sand. After slitting the prepuce, one hundred and ten stones, varying from the size of a grape-seed to that of a pea, were extracted; and in addition there was a quantity of sandy detritus.

REFERENCES.—[1] *Therap. Gaz.*, June 15, 1900; [2] *Boston Med. and Surg. Jour.*, June 21, 1900; [3] *La Grèce Méd.* No. 7, 1899.

PERICARDITIS (Suppurative). *Priestley Leech, M.D., F.R.C.S.*

Porter[1] has an important paper on **Pericardotomy**. The reflexion of the pleura and pericardium is very variable; at the level of the fifth space the pleura will often be found behind the sternal border. From experiments on the cadaver he recommends the following "ideal operation," as one which avoids opening the pleura, opens the pericardium where the drainage will remain good after the sac has contracted, and secures free permanent drainage. An incision is made from the middle of the sternum outwards over the fifth costal cartilage as far as its junction with the rib; elevate the soft parts from the cartilage with a periosteal elevator, and take care to avoid wounding the pleura on its under surface. The cartilage is divided near the rib and sternum, and the internal mammary artery which is thus exposed is ligatured. The triangularis sterni is separated from the sternum, and pushed to the left. If there is much fat, careful dissection with a blunt director exposes the pericardium. The presence of pus is proved by the introduction of an aspirating needle, and the knife follows the needle. The incision is best made downwards and outwards, beginning close to the sternum. The edges of the incision should be stitched to the soft parts. Porter recommends that irrigation should be used in all cases to remove masses of fibrin which may lie at the bottom of the cavity; the irrigating fluid must be warm and have a free exit, and it should be done daily.

Brentano[2] has used a similar incision. Fifty-one cases of incision have been reported, with thirty-one deaths; a mortality of 60 per cent. In forty-six cases the pericarditis was purulent. Porter's conclusions are as follows: (1,) Pericardotomy should be done in all cases of suppurative pericarditis; (2,) Aspiration is more dangerous than open incision, from the varying relations of pleura and pericardium; (3,) Pericardotomy can be done safely and quickly by

resection of the fifth cartilage; (4,) In many cases of serous effusion open incision offers less risk and a speedier cure than aspiration.

Reichard[3] reports two cases operated on by Lindner. He says resection of a rib is absolutely necessary in pericardotomy; it makes the rest of the operation quite easy.

REFERENCES.—[1]*Boston Med. and Surg. Jour.*, Oct. 18, 1900; [2]*Deut. Med. Woch.*, 1898, bnd. xxxii, s. 506.; [3]*Cent. f. Chir.*, No. 44, 1900.

PERITYPHLITIS. (See "Appendix.")

PERNICIOUS ANÆMIA. *T. N. Kelynack, M.D., M.R.C.P.*

This affection, first described by Addison in 1855, and designated "Pernicious Anæmia" by Biermer in 1871, forms the subject of a comprehensive work by William Hunter,[1] containing the results of fifteen years' investigation. He considers it as arising from a special infection, and constituting a well characterised, chronic, infective disease, localised in the alimentary tract. Long standing sepsis, oral and gastric, plays an essential and important antecedent and concurrent part.[2] The pathological sequence and relationship is well indicated in the table overleaf.

Hunter holds that instead of *anæmia* being (1,) The sole feature and cause of the symptoms, it is only one of several, three other groups being sharply distinguished; (2,) *Hæmolytic;* (3,) *Oral* and *gastro-intestinal*; and (4,) *Toxic* (fever, nervous symptoms, etc.) It is the existence of all these groups of symptoms in association with a profound oligocythæmia, that constitutes the complete clinical picture.[3]

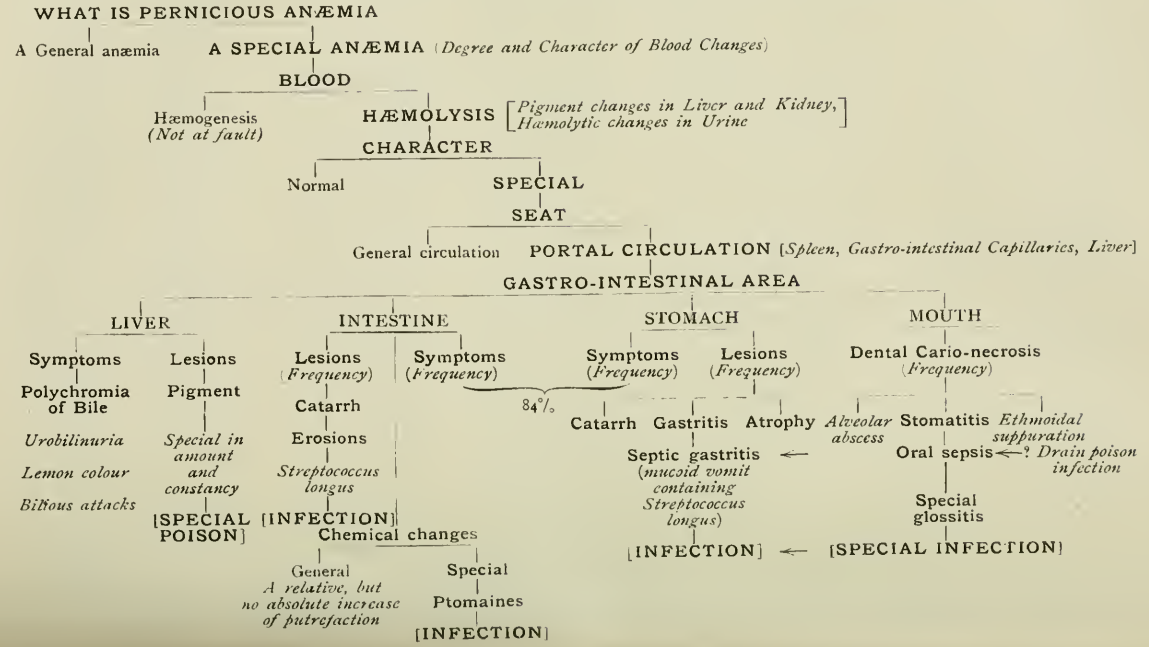
A. E. Barker[4] has published notes of a case of pernicious anæmia following on traumatic stricture of the small intestine. W. Edgecombe[5] also records a case of secondary anæmia arising from repeated nasal hæmorrhage, which appeared to gradually merge into the true "pernicious" form, and must he thinks be classified with those described by Coupland as "symptomatic or secondary pernicious anæmia."

J. G. Emanuel[6] very conveniently summarises the characteristics of the blood as follows: (1,) The red corpuscles number about 1,000,000; (2,) The white cells are diminished, generally under 4,000; (3,) The hæmoglobin, though diminished absolutely, is relatively increased.

Average blood-count in Pernicious Anæmia.

R. B. Cps., 1,200,000 = 24 per cent.
W. Cps., 3,800 — Lymphocytes, 45 per cent; Myelocytes, 2 per cent.
Hæmoglobin, 26 per cent.

SCHEMATIC REPRESENTATION OF COURSE AND RESULTS OF DR. HUNTER'S PATHOLOGICAL INVESTIGATIONS REGARDING THE HÆMOLYTIC NATURE, GASTRO-INTESTINAL SITE, AND INFECTIVE ORIGIN OF PERNICIOUS ANÆMIA.



Besides these numerical changes: (4,) The average diameter of the red cell is increased; (5,) Megaloblasts are present; (6,) Poikilocytosis is well marked; (7,) Polychromatophil degeneration is well marked; (8,) Lymphocytosis is common, amounting to an average of 45 per cent., chiefly the small forms, and this in spite of a leucopænia. This percentage of lymphocytes may rise as death approaches, and so give us an element in prognosis; (9,) Myelocytes are generally present in small numbers, averaging 2 per cent. The microscopic characters of the blood in pernicious anæmia are illustrated in *Plate IX, Fig.* 5.

A. C. Coles[7] in a very careful study of the blood in two cases of pernicious anæmia, shows that quite a noticeable and constant feature is the diminution in the absolute number of the white blood corpuscles. In malignant disease or hæmorrhage, the two most probable causes of intense anæmia, there is almost certainly a distinct leucocytosis. The lymphocytes throughout are relatively increased, whilst the multi-nucleated or neutrophile cells are diminished. F. P. Henry[8] in a clinical study of pernicious anæmia urges that the red blood corpuscles show marked signs of reversion to the type of blood which is normal in the cold blooded animals.

Various pathologists have noted cord changes in pernicious and other severe forms of anæmia. F. D. Batten[9] has recorded a case of pernicious anæmia in which he found degeneration of the cord in the posterior columns, in the region of the direct and crossed pyramidal and direct cerebellar tracts. W. E. Hughes and W. G. Spiller[10] also describe a case of severe anæmia with changes in the spinal cord, and review the subject. Dyce Duckworth[11] has also recorded an important case where conspicuous spinal symptoms developed.

Richard C. Cabot[12] after a careful clinical study of 110 cases, claims that the distinctive features in the diagnosis of pernicious anæmia are: (1,) A slow insidious onset without recognizable cause; (2,) Remarkable freedom from pain; (3,) Striking absence of emaciation (in most cases); (4,) The frequent presence of symptoms suggesting disease of the spinal cord; (5,) Paroxysmal attacks of diarrhœa and vomiting, occurring without any obvious relation to diet or to treatment, preceded and followed by periods in which digestion and absorption were performed without apparent difficulty; (6,) The tendency to great spontaneous improvement in all the symptoms, followed by rapid and inevitable relapse; (7,) A reduction in the red corpuscles to a point below 2,000,000 per cubic millimetre, without a corresponding reduction in the hæmoglobin; a reduction in the

number of leucocytes, and especially in the number of polymorphonuclear neutrophiles; the presence of large numbers of oversized, well-stained red corpuscles, some of them containing nuclei (megaloblasts), together with a tendency to abnormal staining reactions and to an oval shape in the red corpuscles.

F. Billings,[13] in a study of twenty cases, insists on the importance of the high colour index, the severe degree of poikilocytosis, the constant presence of polychromatophilia, and the presence of megaloblasts, usually predominating, at some period of the observation, over the normoblasts, as pathognomonic features of the disease.

Sidney Coupland[14] in his recently published excellent but concise description of pernicious anæmia, seems to consider that the good effects of such measures as the administration of **Bone Marrow, Intestinal Antiseptics, Oxygen Inhalations,** and even **Blood Transfusion**, are in most (and possibly in all) cases transient and temporary.

Horace C. Coleman[15] in a careful study of pernicious anæmia based upon an analysis of eighty-seven published cases, and an inquiry into the after history of twenty-two reported cases, concludes that there can be no hard and fast rules for treatment. Most success may be hoped for from **Rest in Bed, Farinaceous Diet,** the use of some **Intestinal Antiseptic** and mouth wash, and above all from **Arsenic** in increasing doses, and, after some improvement has been shown, from the additional and cautious use of **Iron**. Should the arsenic fail, then recourse must be had to **Phosphorus and Bone-marrow**. In very advanced cases temporary benefit may result from **Transfusion**. Lastly, should a favourable result ensue with arsenic, the patient should continue that drug for a very long period even though feeling in perfect health.

E. Grawitz[16] thinks that treatment in suitable sanatoria may be beneficial. The prognosis, however, is specially bad in old syphilitic cases.

H. Meggitt[17] has had favourable results from the use of Hommel's **Hæmatogen**. W. Elder[18] has recorded a case in which improvement followed the administration of **Anti-streptococcic Serum**.

For some of the work of recent writers on pernicious anæmia see "Blood, Clinical examination of the."

REFERENCES.—[1]*Pernicious Anæmia*, Lond., 1901; See also *Lancet* Jan. 27, Feb. 3 and 10, 1900; [2]*Oral Sepsis as a cause of Disease*, Lond., 1901; [3]*West London Med. Jour.*, July, 1901; [4]*Lancet*, July 21, 1900; [5]*Brit. Med. Jour.*, May 4, 1901; [6]*Birm. Med. Rev.*, June, 1901; [7]*Brit. Med. Jour.*, March 31, 1900; [8]*Amer. Jour. Med. Sci.*, Aug., 1900; [9]*Clin. Soc. Trans.*, 1901; [10]*Phil. Med. Jour.*, June 22, 1901; [11]*Brit. Med. Jour.*, Nov. 10, 1900;

[12]*Amer. Jour. Med. Sci.*, Aug., 1900; [13]*Ibid.*, Nov., 1900; [14]*Allchin's Man. Med.*, vol. ii, 339, Lond., 1900; [15]*Edin. Med. Jour.*, March and April, 1901; [16]*Brit. Med. Jour.*, epit., Dec. 30, 1899; [17]*Lancet*, Aug. 4, 1900; [18]*Ibid.*, April 28, 1900; [19]*Lab. Rep. Roy. Coll. Phys.*, Edin., vol. vii, 1900.

PERTUSSIS. *Henry Dwight Chapin, M.D*

Koloman[1] reports a rare variety of whooping cough in which the spasmodic attacks occur in the form of convulsive sneezing instead of a cough. The sneezing is repeated at intervals of from thirty minutes to one hour, and terminates with a profuse discharge of mucus from the nares, resembling the mucus expectorated at the termination of the regular pertussis paroxysm.

E. M. Payne[2] advises treatment by irrigation of the nares. This acts on the theory that pertussis is due to the irritation of the Schneiderian membrane by a specific organism. Acting on this hypothesis, 10 to 20 ounces of **Carbolic Lotion** (1 in 40) were injected by a syringe through the nostrils, being allowed to go up one and down the other, the operation being repeated three times a day. At first the irrigation caused a good deal of sneezing and coughing, and a considerable amount of gelatinous mucus, some of which was of a greenish colour, was ejected. After a few times the operation caused less discomfort, and the patient, who was at first rather refractory, at last began to look forward to it as a relief to his sufferings. The cure was complete in about a week, but the treatment was continued a few days more to prevent recurrence.

W. Lattey[3] likewise recommends irrigation of the nares. The end of a tube, fitting the nostril (soft indiarubber is as good as anything), and attached to a suitable syringe, should be introduced, and the child having been told to open its mouth, tepid water should be slowly pumped in, followed by an antiseptic solution, which should be weak at first, so as to let the child get accustomed to it by degrees. As the nares may be more or less blocked by secretion, if the fluid is pumped up quickly, some of it may pass down the throat; hence the necessity of proceeding slowly, and of using only plain warm water at first. Both sides should be done.

H. F. Thompson[4] reports good results from **Heroin** in doses of from $\frac{1}{12}$ to $\frac{1}{24}$ of a grain, according to the age of the child. He finds the drug allays the cough, eases respiration, and reduces the number of respirations, while the force and volume of inspired air is increased.

J. E. Godson[5] sent a circular to a large number of physicians to learn their favourite drug in treating pertussis. The following

were the favourites. The relative popularity of the various drugs is as follows :—**Belladonna,** 32 per cent.; **Carbolic Acid**, 28 per cent.; **Bromides,** 20 per cent.; **Creasote,** 12 per cent.; **Antipyrine,** 6 per cent.; **Opium,** as paregoric, 2 per cent. The personal factor appears to count for much in the treatment of this disease, and there is very wide variety in the mode of procedure adopted. One practitioner depends entirely on carbolic acid; another pins his faith on paregoric alone; a third uses nothing but creasote vapour; while the great majority would consider no prescription complete which does not contain belladonna. Even in the use of belladonna there is diversity of opinion, some being satisfied with an average dose and others pushing it to the limits of safety. Of course all prescriptions contain expectorants in combination, and the favourites are the alkalies and ipecac.

The doctor's own treatment is as follows: Commence at once with the continuous inhalation of **Creasote,** by suspending creasote cloths both in the day and night chambers. The density of the vapour employed can easily be regulated by varying the number of cloths. Treat any accompanying bronchitis, and clear the lungs of all moist sounds as much as possible before using any special internal antispasmodic remedies. **Antipyrine** may be given in suitable doses in all cases where the lungs are fairly clear, provided that the circulation is good. Expectorants may be combined with the antipyrine. The chest and upper part of the spine should be treated by counter-irritation. Good air, warm clothing, light and wholesome food are necessary in all cases. He has employed these methods for the last seven years, and is quite satisfied with the results. The average length of time required for cure in a variety of cases during a severe epidemic was under twenty days.

REFERENCES.—[1]*Arch. f. Kind.*, bd. xxix, hft. 3 and 4; [2]*Brit. Med. Jour.*, May 4, 1901; [3]*Ibid.*; [4]*Phil. Med. Jour.*, Jan. 12, 1901; [5]*Birm. Med. Rev.*, April, 1901.

PHTHISIS. *Prof. H. P. Loomis, M.D., New York.*

While no startling advance has been made in the treatment of phthisis during the past year, still the outlook was never better than it is at present for limiting the spread of the disease. The medical profession and the people are both aroused and are working together. Its cause and the methods of its dissemination are almost as well known by the laity as by the profession. The remarkable success which has recently been achieved in combating severe parasitic diseases has been a great incentive to the endeavour to attack tuberculosis along the same line. It is being more and more believed

that the sputum is the only practical source of infection, and that when this is destroyed, the danger of contagion is almost *nil*. Heredity, which was formerly considered of so much importance in the causation of phthisis, can now be almost entirely eliminated. It was thought that the British Congress of Tuberculosis which met in London, July 22nd to 26th, in the work of its various sections, would bring some new light into the study of tuberculosis. The writer, who attended the meeting, failed to discover in any of the papers read any especially new or original ideas, with but one exception. By far the most interesting paper was that of Prof. Robert Koch, who made the absolute statement based on a large number of experiments upon cattle, that human tuberculosis differs from bovine, and cannot be transmitted to cattle. On the second point of his paper he did not seem to be so positive. He does not consider that there is any proof of the susceptibility of man to bovine tuberculosis, and he believes that should such a susceptibility really exist it is of but very rare occurrence. Koch estimates that the extent of the infection by the milk and flesh of tuberculous cattle and the butter made of their milk is hardly greater than that of heredity, and, as a result of his researches, he does not believe it advisable to take any measures against infection by these channels.

This is one of the most important statements that Koch has ever made, and, as anyone can see, its importance is far-reaching. If true, the year 1901 will mark an epoch in the study of this disease. The other points of the Congress that were emphasised were that special hospitals for consumptives should be erected, and when this is impossible, special wards should be set aside in existing hospitals. Where this had been done, tuberculosis showed marked decrease. It was also deemed advisable that disinfection should be instituted where a tubercular patient had died, or where he has changed his residence ; not only the dwelling room, but the clothes and bedding used by the patient. There was some discussion as to the advisability of compulsory notification in cases of tuberculosis, but the general sentiment of the profession appeared to be against this at the present time. Another new point that was brought out by the Congress was, that while the establishment of sanatoria was advisable, it must not be forgotten that they could do good only to a small number, since practically cases that can be cured will be small in comparison with the whole number of consumptives, and that the establishment of sanatoria was really not so important as the enforcing of State and municipal laws.

Diagnosis.—There is little, if any, diversity of professional

opinion among those who have had considerable experience with the **Tuberculin Test**, as to its diagnostic value when judiciously employed.

The question of dosage is vitally important, and probably still greater uniformity in the results of Koch's method would follow if medium-sized initial doses (from 2 to 5 milligrammes) were employed. This would obviate the disadvantages arising from the necessity of repeated injections, as is generally the case when small commencing doses (*e.g.*, from half a milligramme to a milligramme) are used.

The following table has been carefully prepared by Prof. Anders, of Philadelphia, to indicate the practical utility of the test :—

Name of Observer.	Suspicious Cases	Percentage of reactions.	Undoubted Cases	Pertentage of reactions	Doses employed.
M. Beck	1,154	100	371	100	1—10 mg.
H. Neff	8	0	12	58·3	1—6 ,,
C. F. Martin and G. D. Robins	2	100	24	87·5	$\frac{1}{2}$—3 ,,
G. G. Sears ...	10	90	—	—	Up to 1 ,,
F. W. White ..	8	100	45	100	1—10 ,,
Edw. Otis ...	85	62·3	7	42·8	5—10 ,,
E. L. Trudeau ...	14	50	—	—	$\frac{1}{2}$—3 ,,
W. P. Northrup	31	74·2	16	100	$\frac{1}{4}$,,
Senator	4	100	46	100	
Grasset and Vedel	13	76·9	3	0	$\frac{2}{5}$,,
Von Jaksch ...	22	79·1	20	95	$\frac{5}{15}$,,
Maragliano ...	47	23	—	—	$\frac{1}{3}$,,
Mouton	12	75	—	—	$\frac{1}{2}$—3 ,,
Pórt	40	50	—	—	$\frac{2}{10}$,,
Maydl	6	83·3	1	100	$\frac{1}{8}$,,
J. Petruschky ...	2	100	—	—	
Anders	12	58·3	—	—	$\frac{2}{5}$,,
TOTAL	1·460	71·89	544	78·36	

At the meeting of the Academy of Medicine of Paris M. Robin communicated the results of some researches which he had made upon 392 patients with regard to constitutional conditions (*terrain*) predisposing to phthisis. One well-known characteristic of phthisical patients is a loss of organic mineral matters. But there is another which is quite opposed to the ordinarily expressed ideas. It is generally thought that both respiratory changes and hæmatopoiesis are much diminished in phthisis. On the contrary, respiratory exchange is much increased in this disease, and of 162 cases examined

this peculiarity was found in all but eight. The respiratory chemistry of phthisis is something quite peculiar. A healthy man consumes per kilogramme of body-weight per minute 107 c.c. of air. For phthisical patients the figures are as follows: Men, 192 c.c. and women 225 c.c. A normal man consumes 5·13 c.c. of oxygen, a phthisical man 8·72 c.c., and a phthisical woman 10·29 c.c. A healthy man expires 4·17c.c. of carbon dioxide per kilogramme per minute, a phthisical man expires 8·85 c.c., and a phthisical woman 7·5 c.c. A healthy man absorbs 0·85 c.c. of oxygen per kilogramme per minute, a phthisical man 1·87 c.c., and a phthisical woman 2·5 c.c. This exaggeration of respiratory exchange exists in a less degree in fibrous tuberculosis. It has been observed in the very earliest stages of the disease, long before any auscultatory signs are perceptible. It exists also in the latest stages. It can be definitely stated therefore that in 92 per cent. of phthisical patients the respiratory exchanges are much increased in every stage of the malady. These results hold good in cases of tuberculosis of the bones, but they are not found in tuberculous peritonitis or meningitis, or in lupus. Therefore, in doubtful cases the study of the respiratory chemistry will enable the physician to make a diagnosis at a very early date, and in various cases M. Robin and M. Binet have been able to diagnose a tuberculous predisposition (*terrain*). In sundry cases where they noted exaggerated respiratory exchange the patients were attacked by tuberculosis and died. On the contrary, a patient in whom numerous bacilli were found, but whose respiratory exchange was unaltered, recovered. This method of examination may serve to separate patients with a tuberculous history into those who are predisposed to the disease and those who are free from all taint. Finally, it may be considered that examination of the respiratory exchange offers a method of the very first rank for making an early diagnosis in cases of tuberculosis.[1]

M. Hirtz and M. Brouardel[2] have taken a large number of tracings of the respiration and find that normal breathing shows four distinct lines: a line of inspiration, a horizontal line showing the lungs filled, a line of expiration, and a line representing the lungs empty. In an incipient or beginning pulmonary tuberculosis but three lines appear in the graphic tracing, that representing the period of the empty lungs having disappeared. The line of expiration is prolonged and the line of inspiration is often lengthened. These peculiarities last through all the stages of the disease. The authors have not found these tracings in any other pulmonary disease.

All clinicians are acquainted with the special odour of a confined

space occupied by many subjects of confirmed tuberculosis. Prof. Ferran, of Barcelona, shows that this odour is produced through the agency of a saprophytic form of Koch's bacillus, and that this characteristic can be made use of to diagnose tuberculosis from sputa especially poor in tubercle bacilli. M. Ferran's procedure is as follows: He encourages in the sputum or other products of tuberculous ulcerations the reproduction of this saprophytic bacillus, which accompanies the bacillus of Koch and secretes a considerable quantity of spermine. To effect this he takes horse's, mule's, or sheep's serum, preferably the serum of sheep immunised by means of this spermine-producing bacillus. He mixes in a sterilised vessel 10 c.c. of serum with 3 or 4 c.m. of suspected sputum, and leaves the whole exposed to the air in a surrounding temperature of 98·6° F. At the end of thirty-six hours, and sometimes earlier, on bringing the nostrils near to the surface of the serum, the odour of human semen, due to the spermine produced by the bacillus, is clearly perceptible. On the other hand, when the sputum does not come from a tuberculous subject the odour of spermine is not produced. The constancy of Ferran's results calls for a thorough investigation, as, if they can be substantiated, the observation is of great practical value.

Prof. Bozzalo,[4] of Turin, in a paper read at the recent International Congress of Tuberculosis at Naples, has conveniently summarised the following eleven important points which are of assistance in forming a diagnosis of pulmonary phthisis in its earliest stages. They are as follows: (1,) Albuminuria alternating with phosphaturia; (2,) A pseudo-chlorosis distinguishable from true chlorosis by the slighter degree of reduction of the hæmoglobin and by the less-marked vascular and cardiac disturbances (palpitation, soft pulse, pulsating arteries, etc.); (3,) The presence of gastric disturbances like gastralgia, anorexia, nausea, and vomiting; (4,) Tachycardia in the absence of fever; (5,) Diminution of blood-pressure; (6,) A rise of temperature following bodily or mental exertion, above the slight rise proper to health. In women a rise of from 0·3° to 0·4° C. is observable before the onset of each menstrual period; (7,) An undue tendency to sweat after exertion, mental or bodily, also night sweats; (8,) Pain in the supra-orbital regions and in the neck; (9,) A slight inequality of the pupils with a tendency to dilatation (mydriasis); (10,) The occurrence of herpes zoster; (11,) Enlargement of the spleen. Of these the first seven symptoms are the most frequently met with, and possess considerable diagnostic value.

At the Congress of American Physicians and Surgeons recently held in Washington, Boardman Reed,[5] of Philadelphia, read a paper on stomach conditions in early tuberculosis, which he summarised as follows: (1,) In early tuberculosis the secretion of HCl is very frequently excessive, the peptic glands being in a condition of irritability which causes stimulating remedies of the creasote class to disagree and act injuriously; (2,) Oils tend to depress the secretory function of the stomach, and in consequence cod-liver oil is likely to help the cases in which the creasote class of drugs hurt, but on the other hand hurts the cases in which the gastric secretion is inactive, and the other ones in which creasote and its congeners often do good; (3,) Therefore it ought to be the rule to ascertain the condition of the secretory function of the stomach before pushing either class of drugs; (4,) When analysis of the gastric contents cannot be made, it is safer to combine creasote with cod-liver oil, so as to let one neutralise the other in its effect on the stomach; (5,) The motor function is very generally depressed in tuberculosis and must be restored before a cure can be effected. Drugs avail little in this direction, but diet, exercise, especially in the open air, faradism, and abdominal massage, except where hyperchlorhydria complicates it, are the most valuable means of effecting the result.

Michaelis[6] finds that the diazo-reaction of Ehrlich is of value as a prognostic indication in cases of pulmonary tuberculosis, and that when the reaction is present it renders the prognosis grave. From a large number of observations made on phthisical patients he has found that in 167 cases of the disease 111 gave a positive diazo-reaction and fifty-six gave no reaction. Of the latter class five patients were cured, forty-four improved, five were unchanged, and three died. In the group of cases which gave the diazo-reaction the mortality was greater and the improvement smaller. Thus of 111 patients, thirty died, thirteen were not improved, and fifteen were improved, while none were cured.

TREATMENT.—One of the most original and instructive papers of the year is that by Henry Harper,[7] on "**Pure Urea** in the treatment of tuberculosis." From his investigations among many families subject to gout and its allied diseases, including all forms of calculi except phosphatic, he is persuaded that there is antagonism between these diseases and tuberculosis, and that this class of patients possesses a natural antitoxin against the bacillus. Here it is worthy of note that nuclein, which is used as a remedy in tuberculosis, in certain blood diseases accompanied by leucocytosis, splits up and forms uric acid. Harper selected urea, a substance of known

chemical composition, from amongst its congeners, the "great end-products of nitrogenous metabolism," as an antitoxin for the tubercle bacillus, his opinion being that urea is a constructor or builder up when administered in tuberculosis. This view was forced upon him by the frequent expressions of patients stating that they feel so much improved since eating kidney, liver, or brain—all substances rich in urea—in conjunction with urea ingested by the mouth. A few chronic phthisical patients have stated that these substances acted like a stimulant on them. Urea props up and holds together the tuberculous subject better than any other substance with which we are acquainted.

He notices in support of his theory the following facts: There is proof that alcohol lessens the production of urea in the liver; and when we remember that alcohol is carried almost direct to the liver, injuring the urea factory, this may explain why so many alcoholics lapse into tuberculosis. Again, it is a matter of every-day observation that if a tuberculous woman becomes pregnant, the tuberculosis becomes quiescent during the term of pregnancy, but immediately parturition takes place the bacilli become active. If we follow up this conclusion and consider the disease of pregnancy, puerperal eclampsia, which is caused by toxic substances of excrementitious matter circulating in the blood, which matter the excretory organs, notably the kidneys, fail to eliminate, this brings us into close quarters with the antitoxins which hold the bacilli in check during pregnancy, *viz.*, the nitrogenous waste-products that abound plentifully both in pregnancy and eclampsia. Again, the now well-recognised fact that so long as pleurisy fluid remains in the thorax the activity of the bacilli is kept in check, but immediately the fluid is withdrawn the bacilli become active, suggests anti-bacterial properties in this fluid; and when we remember that the pleurisy fluid is rich in albumin and contains urea, uric acid, xanthin, leucin, etc., probably here urea plays the most important part as a bactericidal agent.

Harper supplies this excess of urea to the organism in two ways: (1,) By diet; he orders plenty of meat, and especially to eat daily one well-cooked kidney and an equal weight of liver, or calf's or sheep's brains. The patient is told that these things are given to him as a medicine; (2,) 20 grains of pure urea four times a day, dissolved in half a glass of water. In some cases he gave the urea only after meals, and combined a few minims of creasote with it.

Closely connected with this subject is "Zomotherapie," or the treatment of tuberculosis by **Raw Meat.** It has for some time been recognised clinically that the ingestion of raw meat is useful

in tuberculosis. Experimental investigations on animals corroborate the clinical observations. Introduced as a method of treatment by Weiss, of St. Petersburg, the good effects of feeding on raw meat in cases of consumption have been tested by various observers.

Héricourt and Richet's researches and experiments with raw meat on tuberculous dogs induce them to attach some importance to the rawness of the meat, its action being supposedly due to a somato-antitoxin existing normally in muscle plasma or serum; actually the reason may really be that more albuminoid nutriment was forthcoming for less digestive effort. Perhaps the contention that muscle serum possesses antitoxic influences has some foundation in fact, as persons of well-marked muscular development are known to be less liable to consumption than others not so well developed muscularly. Consumptive patients of good muscular physique do better than those who are not so fortunate. Finally, in cases of profound tuberculosis, such as the tuberculous infection of a large serous cavity, as the pleura or peritoneum, the patients, however well developed muscularly, seem to lose their muscular tissue at a rate out of all proportion to that occurring in other diseases. This may be because the muscular tissue is used up in a vain attempt at combating the tuberculous poison. Meat albumin or myosin-albumin can be used either in a cooked state or as a raw meat-juice prepared from fresh meat, and used immediately after preparation. It can be made either by mincing the meat and expressing it, or by the cold extraction process with saline solution. This last can either be used alone as it is, or it can be flavoured with port wine, spices, etc. Commercial raw meat-juice preparations on the market possess no advantage over the home-made raw meat extract, are most expensive, and must necessarily be highly charged with chemical preservatives of more or less harmful nature.

The well-known and peculiar antiseptic properties of **Formic Aldehyde** have induced a number of investigators to introduce it into the system in cases of phthisis, believing that it would attack the bacilli more effectively than any other agent known. (See special article, *infra*).

The treatment of pulmonary consumption by inunction of some one of the preparations containing **Iodine** is not a new one, and most of those who have written on this subject recommend the preparations containing the largest amount of iodine. For the last two years **Iodol,** which contains 88 per cent. of iodine, or more than three times as much as europhen and more than twice as much as iodoform, has been used by Tyson in all cases of consumption at

the Rush Hospital, with marked improvement in the various symptoms.[8] This was only temporary in the advanced cases, but in the incipient cases the improvement continued so long as they were under observation. The improvement covered general conditions, strength, weight, cough, expectoration, dyspnœa, appetite, and even physical signs, although the last were not so much influenced as some of the advocates of this treatment claim. All the cases were hospital ones. In addition to the iodol inunctions, they received $\frac{1}{2}\frac{1}{3}$ gr. of **Strychnia** three times a day, with good nourishing food and proper outdoor exercise. The inunctions contained 20 grains to the ounce of olive oil; the quantity rubbed in was a drachm three times a day, increased to half an ounce gradually, say by about a drachm a week. The rubbing is done by the patient himself, and requires about ten minutes to rub in the whole quantity.

Alexander[9] employs subcutaneous injection of **Camphor.** His method consists in the daily injection of about 2 grains of camphor. This may be divided into two doses, or given once a day, according to the wish of the patient or physician. Not only are the symptoms already enumerated improved by this treatment, but it is also stated that fever disappears under its influence. Alexander does not believe that there is any danger through the cumulative action of the camphor when it is given daily in the doses which have been named, and does not recognise any contra-indications to its use.

The literature dealing with the general and pharmacological effect of **Hetol** on tuberculous subjects is assuming large proportions, and the method of action of the drug has been ascertained and described by others as well as by the introducer, Landerer. (See "Hetol," p. 36).

There is no question that **Hydropathy** is a very important aid in the treatment of tuberculosis. It is not applicable to all cases, but used judiciously and in the right kind of cases it will give most pronounced and permanent results. It acts by improving general nutrition and the pulmonary circulation, together with increased respiratory movements. It is extensively used in all the sanitaria of Germany. W. Winternitz advises improvement in the general condition of persons threatened with tuberculosis by cold baths, showers, or douches. He urges the establishment of water cures with hot and cold baths, modified baths, and carbonic acid baths, together with opportunities for sweat baths and hot-air baths, to be followed by rubbing by trained assistants, in all public baths and sanatoria. He reports by the use of these methods a comparative cure, with a gain in weight in 80 per cent. of his own chronic afebrile

cases; a decided improvement (32 per cent.) in florid cases; and in incurable cases, subjective improvement and a renewed hope of recovery, which he regards as of great humanitarian value.

Thomas J. Mays[10] has for nearly ten years injected **Silver Nitrate** over the vagi of the neck, with a view of producing counter-irritation over these nerves, and thereby enhancing the resisting power of the lungs. Five minims of a 2·5 per cent. solution of silver nitrate injected at a point immediately over or slightly behind the pulsating carotid in the region of the neck, preceded by a similar dose of cocaine hydrochlorate through the same needle, will produce the requisite degree of irritation.

Cough.—Mathieu[11] recommends the following for patients who are seized with cough and consequent vomiting after each meal: (1) The swallowing of small pieces of **Ice** immediately after the meal. This is frequently, but not always, successful. (2) **Chloroform Water** (saturated) is diluted with an equal quantity of water to prevent any burning sensation, and one or two tablespoonfuls of this solution are taken four or five minutes after the meal. This suffices to arrest the cough in the majority of cases. Instead of chloroform water, **Bromoform Water,** which is less irritating, may be used in the following combination: Bromoform water, 100 grms.; syrup of codeine, 30 grms. (3) **Menthol** is also extremely useful, and may be given in an emulsion with mucilage—15 to 25 c.grms. to 150 grms. of emulsion. (4) If everything else fails, a narcotic may be used, such as hydrochloride of **Morphine** and of **Cocaine** in equal quantities, dissolved in distilled water.

The results obtained in sanatoria tend to show the advantages of dealing effectively with cough in cases of pulmonary tubercle. Lalesque, of Arcachon,[12] shows that in very many cases the patients contract a habit of coughing as soon as they have any tickling or irritation of the fauces, larynx, or trachea. Such cough is likely to be spasmodic, irritating, and unaccompanied by expectoration. A very common method of treatment is the administration of sedatives. This is a method which the writer condemns in the strongest terms. He shows that it is quite possible to drill the patient into the manner of not giving way to the sensation productive of cough, and with practice he shows that it is quite possible to avoid all such spasmodic attacks. The patient is not to close his mouth and hold his breath in the hopes that the desire to cough may pass off. Such an attempt is likely to be followed by a sudden severe cough. The best method is to close the mouth gently, and take three or four quiet, deep, respiratory movements through the nose. As regards

expectoration cough, it is also shown that it may be unduly excessive on account of effort on the part of the patient to expectorate mucous material which is as yet undetached. A patient should be instructed to avoid coughing prematurely, and a little practice will soon enable him to recognise when expectoration may be brought about by a single cough. This may prevent a great deal of tiring effort which cannot but prove injurious to the tuberculous patient.

Night Sweats.—**Tellurate of Sodium** has been used with signal success as an anti-sudorific in phthisis. It is given in doses of $\frac{1}{12}$ to $\frac{1}{2}$ gr. each day, and is usually administered for four or five consecutive days. It never produces any toxic effect. The only disagreeable thing about it is that it imparts its odour to the breath. It is best administered in alcoholic solutions such as the following :—

℞ Tellurate of Sodium 0·10 to 0·20. | Alcohol 50.
M. S. A teaspoonful morning and night.

Or in pills. It should be administered long enough before the onset to be absorbed and produce its physiological influence. The drug is a white powder, soluble in water and alcohol, and is eliminated both by the urine and the lungs. It has the advantage over atropine in not producing disagreeable physiological effects, such as the drying of the mucous membrane.

Among external applications which have been suggested for relieving the night sweats of phthisis, among the more recent is **Formalin.** While very efficacious, it has the disadvantage that the formalin vapour is apt to irritate the eyes and the respiratory organs. It can be used in the preparation called **Tannoform.** This does not irritate the skin like pure formalin, and can be used as a dusting powder applied by means of a pad. Another combination which has been highly recommended by Kohnstamm[13] is **Heusner's Lotion,** as follows :—

℞ Balsam of Peru	1 part	Chloral Hydrate	5 parts
Formic Acid	5 parts	Absolute Alcohol	100 parts

He adds that its efficiency is heightened by the addition of one part of trichloracetic acid, and that it is also effective in the night-sweats of exophthalmic goitre.

Hæmoptysis.—J. E. Fraser, of the Ventnor Chest Hospital, writing on this subject, says that the problem is as to how we are to bring down lateral pressure? There are only two ways of doing this in the pulmonary vessels : (1,) By acting on the heart-beat, the primary origin of all blood pressures ; (2,) By acting on the vascular approaches to the wounded vessel. The pulse is full and rapid, almost bounding in some cases, and the effect of morphine on this

pulse is very marked and appreciable to the finger, evidently lessening the number, and particularly the force, of the beats. Contraction of the vascular channels in front of the lesion is well brought about by **Ergot,** but the use of ergot is only allowable on the supposition that hæmorrhage is from a vein or small arteriole ; moreover ergot, or ergotine as he prefers, is very often, in fact generally unnecessary, morphine being by itself quite sufficient to stop the bleeding. There is also perhaps some advantage gained by not using ergot unnecessarily, as unstriped muscle is liable, like the other variety, to fatigue, and thus the further use of the drug, if it happened to become necessary, would not be possible. Give the patient, then, an injection of **Morphine** and **Ergot,** if it is thought necessary. The tolerance of these patients for morphine is very marked ; in a suitable case he has little hesitation in giving $\frac{1}{2}$ grain hypodermically, never less than $\frac{1}{4}$ grain, and in these doses it only produces drowsiness ; he has not often seen patients sleep after the injection. Hæmorrhage having ceased, the next important indication in the whole treatment is to prevent recurrence. Some patients show this tendency to recurrent bleeding very shortly after the first attack, others not for many hours ; the former will generally require frequent interference to keep down the lateral pressure. The main points to be remembered are to keep down the speed and force of the pulse, and to effect this by a liberal use of morphine, supplemented by ergot when necessary ; these injections may be given every two, three, four, or six hours, as indicated, and the length of time between them can be gradually increased after the first day or so, as the heart seems to settle down to quiet action under the injections. The inconveniences of this treatment are justified by the results. His experience of drugs given by the mouth is not encouraging.

Janowski,[14] of Kiew, reports his successful employment of **Terpinol** in the treatment of hæmorrhage from the lungs. His method of administration is to give three drops every two hours in a little milk. He states that under this method of treatment the cough is decreased, the hæmorrhage ceases, and the patient's pulmonary condition is rapidly improved.

Diarrhœa.—In the treatment of this symptom Doumer[15] has had good results from the therapeutic application of the **Faradic Current.** The electrodes are covered with chamois skin, and are applied well moistened over the entire surface of the abdomen. The *séances* should last five minutes, and should be repeated two or three times daily. The tampon electrodes should be particularly applied along the course of the colon, and the current should be

strong enough to produce good contractions of the abdominal muscles. The first improvement noticed is in the diminution of the number of stools; later their consistency changes and they become formed. By the fourth or fifth day the cure is generally complete.

The Open-air Treatment of phthisis has been discussed more than ever before during the past year. The benefits of the sanatorium treatment are believed by many to be due principally to this cause. Very many patients cannot leave their homes, but to obtain the benefit of "open air" is always possible. Generally speaking, the effects of life in the open air are increased sense of well-being, increased appetite and assimilation, resulting in gain of weight and physical development, reduced frequency and increased strength of the pulse; nerve tone is improved, and healthy sleep is encouraged; the blood is improved in quality, the lungs work more actively, and there is comparative immunity from respiratory catarrh. Taking these effects separately as they concern our patients with pulmonary tuberculosis, the patients' own statements can be accepted as to the feeling of well-being; one's universal experience is that they express themselves as infinitely better in the open air, and feel unable to remain in a close room. The increased appetite that ensues on exposure to open air is familiar to all, and is of fundamental importance in the treatment of phthisis. There is a tendency among writers on the open air treatment to forget that it is not the mere ingestion, but the assimilation, of much nourishment that is to be aimed at. Open air not only helps the patient to grapple with his large meals, but it also promotes their absorption. One has learnt that the persistent use of open air, perhaps for many months, is one's surest remedy for the furred tongue, anorexia, nausea, and dyspepsia of phthisis. The patient must live out of doors. In winter he does this by being warmly muffled up in furs and blankets, with hands and feet well covered, and sitting or lying in the open air in the sunshine if possible; protected from the wind, if need be, by a small canvas screen. If there is rain or snow, a glass-encased verandah will supply the place of the solarium of the sanatorium; or a canvas cover to the verandah, leaving an opening for free access of air, will answer very well. The patient thus rests out-of-doors. In summer the shady spots in the open will naturally be sought. At night the windows of the bedroom are kept wide open, winter and summer. The excessive cold of the winter night may be tempered by a grate fire in the open hearth, but fresh air must enter freely from without.

It would almost seem as if the "open-air" treatment had reached

its limit in an article by Millet, of Brockton, Mass.[16] He reports five cases of pulmonary tuberculosis in which he recommended the patients, they being of the poorer class and unable to obtain that change of climate which was considered requisite, to sleep out of doors at night without even a covering or roof over their heads, save when rainy weather called for it. Beds were fixed out on the roofs of their houses, in which the patients slept under ordinary bedclothes, wearing only soft felt hats and cotton night-shirts. In all five cases the results appear to have been marvellous. Within two weeks improvement was visible. The temperature fell to normal, the cough disappeared, respiration was improved, and, above all, a rapid and considerable increase of weight ensued. Millet considers dampness and draughts of no account, and holds that the only inconvenience, even of heavy dews, consists in the necessity of drying the bedclothes.

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PHTHISIS, Formic Aldehyde in.

D. T. Choury Muthu, M.D., M.R.C.S., L.R.C.P.

Dr. Lardner Green,[1] of Salisbury, was almost the first in this country to bring before the medical profession the desirability of using the inhalation of **Formaldehyde** in early cases of pulmonary tuberculosis.

Dr. William Murrell,[2] of London, in his report to the Scientific Grants Committee of the British Medical Association, 1899, described twelve successful cases that had been treated with the vapour. On the continent, among others, Professor Cervello, of Palermo University, has given considerable attention to this subject. In his communication to the Royal Academy of Medical Science in Palermo, he related that " out of twenty-six patients (nine women and seventeen men) ten were perfectly cured."

Patients have been treated with this drug since 1899 in the sanatorium with which the present writer is connected, and clinical observations have been continued during the last three years, several patients being treated during the first two years, and record kept of twenty-two cases, some of which have already been published.[3]

Besides these several others have been undergoing the treatment during the present year. As one of the first steps was to invent an apparatus for the every-day use of the patients, before going into the result of the treatment, it will be best to briefly describe the apparatus used for the purpose, which can be obtained from Messrs. Maw, Son, & Thompson, of Aldersgate St., London. There are two kinds of apparatus used for the treatment: (1,) A vapouriser; (2,) An oro-nasal inhaler.

The vapouriser consists of a methylated spirit lamp and an open boiler, into the mouth of which is let in a metal tray or two (one within the other) with perforated sides. The tray carries paraform powder or tabloids. The principle of this method is that the moist products from the combustion of the spirit acting upon paraform convert it into formaldehyde gas. The generation of steam by the boiler renders the action of formaldehyde more effective and penetrating, partly by helping the evolution of gas, and partly by confining its diffusion to the room where it is generated and used. The boiler is detachable, so that the vapouriser can be used without it if preferred.

The oro-nasal inhaler is somewhat similar to that of Dr. Yeo, and is simple in its construction. It is cone-shaped, fitting over the nose and mouth, and fastened round the ears with an elastic tape. It is made of wire gauze, with a thin layer of sponge covering about half the inside surface

Mode of using the Apparatus.—(1,) The vapouriser is used in the patient's bed-room for one or two hours daily, with doors and windows partially or nearly closed. The lamp is lit, the boiler is nearly filled with hot water, paraform powder (2 drachms) or tabloids (two) are placed in the tray. The patient sits in a lounge chair or lies in his bed and inhales the gas.

(2,) The patient uses the inhaler nearly the whole of the day, except during his meals, and even part of the night. Here lies the secret of the success of the treatment, *viz.*, in the continuous inhalation. As for the medicament, formalin has been used in conjunction with pine oil, eucalyptus, chloroform, and alcohol. Lately I use a mixture of formalin (4 to 10 per cent. according as the patient can bear), chloroform, and rectified spirit. About 30 minims of the mixture are dropped into the inhaler, and renewed every two or three hours.

In this connection it will be recalled that Professor Ruata,[4] of Perugia, relates similar experience in connection with the use of the oro-nasal inhaler, which he emphasises should be worn constantly

and for many hours, in order to ensure any real success. He uses as an inhalant a mixture of creasote or formalin with chloroform and alcohol.

Each of these methods of using formaldehyde possesses its own advantages.

1.—(*a*,) It disinfects the room of the patient with his belongings, as furniture, utensils, etc.; (*b*,) It disinfects his personal clothing—especially his coat—where even the tiniest particle of sputum lying unobserved incurs the risk, when it gets dry, of reinfecting the patient and being a source of danger to others; (*c*,) The vapour of formaldehyde used in this way remains long in the patient's bed-room, so that he gets the full benefit of its effects.

2—(*a*,) The patient can use the inhaler wherever he is, in the open air, while he reads, writes, or goes for a walk, and for many hours; (*b*,) There is constantly a zone of disinfected atmosphere round his person; (*c*,) The inhaler keeps out dust or any other extraneous matter injurious to the patient.

To summarize briefly the effects of formaldehyde in a case of pulmonary tuberculosis:—

(1,) It soothes the laryngeal and bronchial mucous membrane.

(2,) The expectoration becomes less tenacious and in time diminished in quantity.

(3,) It lessens the fever.

(4,) The tubercle bacilli diminish in number, and in some cases entirely disappear.

Now as to the results. Full records have been kept of twenty-two patients who have been treated with formaldehyde for three to five months. All of them have been undergoing the open-air treatment for six to eleven months. They have not had any special medicine, beyond a pill or a mixture to correct indigestion.

Out of these twenty-two patients, *eight* completely recovered, *i.e.*, physical signs were absent, and no tubercle bacilli were found in the sputum when they left. They are all doing well till the present day.

Nine were almost cured; *i.e.*, the physical signs were not entirely absent, and a few tubercle bacilli remained when they left, but they have been in good health, and have followed their different avocations.

One was slightly benefited. In *two* the results were indifferent. In *two others* it had very little effect.

REFERENCES.—[1]*Brit. Med. Jour.*, Jan. 20, 1900; [2]*Ibid.*, Jan. 18, 1899; [3]*Lancet*, Aug. 3, 1901, page 310, substitute C. Muthu for R. Maguire; [4]*Med. Annual*, 1901, p. 534.

PHTHISIS, High-Frequency Currents in.

Chisholm Williams, F.R.C.S.

The source of energy will, for most practitioners, be the electric light mains or secondary batteries—that is, accumulators. One requires a large Rühmkorff coil giving a spark in air of 10 to 12 inches, a good motor interrupter, two Leyden jars, large and small solenoids, and a D'Arsonval-Oudin resonator and suitable electrodes. The high frequency currents are produced from the external armatures of the Leyden jars; the electrical energy of high pressure obtained from the induction coil is connected by the secondary terminals of the Rühmkorff coil to the inner coatings of the Leyden jars, which are so arranged as to allow a spark gap between them; the outer coatings of the jars being connected by means of a small solenoid which in reality furnishes the currents of high frequency (see diagram, *Fig.* 44).

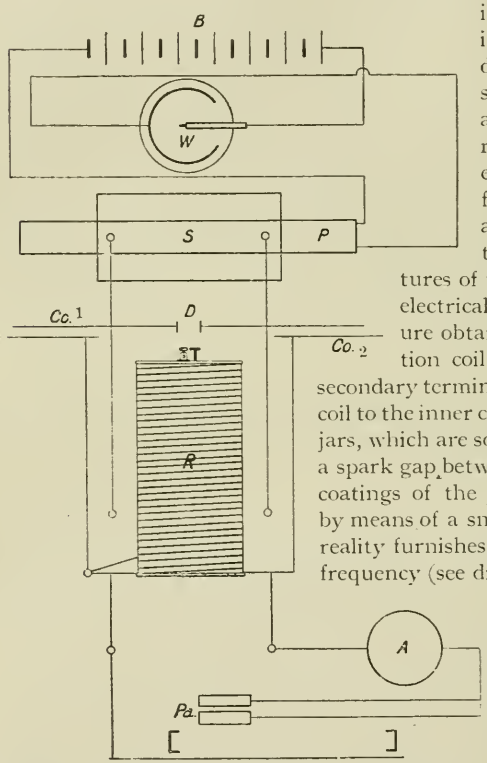


Fig. 44.—*B.* accumulators; *W*, interrupter; *S.P.*, Ruhmkorff coil: *Co*1, inside of Leyden jars; *D*, spark gap; *Co*2, outside of Leyden jars; *R*, resonator; *A*, milliampèremeter; *Pa*, patient; [couch].

There are three chief ways in which the treatment may be carried out—by auto-conduction, auto-condensation, and by means of local applications from the free end of the resonator of Oudin.

For *Auto-conduction* is required a large solenoid of sufficient dimensions to envelop the patient, the two ends of which are connected to the outer coatings of the Leyden jars. In this way a general electrification of the patient is brought about, and currents are induced in the body of the patient (*Fig.* 45).

INSTALLATION FOR PRODUCTING ELECTRICAL CURRENTS OF HIGH FREQUENCY AND HIGH POTENTIAL.

At the top, left, is the switchboard, and underneath the motor interrupter. At the right side is the resonator, with the spark-gap and 2 Leyden jars underneath it. Between this and the switchboard is the Rühmkorff coil. In front is the specially insulated couch. The apparatus was constructed by Mr. A. E. Dean, London.

For *Auto-condensation* the patient is placed upon a couch, having a large sheet of metal under the insulated cushions. This is made to form one armature of a condenser. The patient, when holding in his hands electrodes which are connected to the Leyden jars, forms the other armature of the condenser (see *Plate XVII*).

Resonator or Mono-polar Treatment.—From free end of the resonator is obtained a brush discharge, or "effluve," similar to that obtained from the static machine, but of greater intensity and absolutely painless. This is directed by means of a brush electrode to the particular part of the patient requiring treatment. This brush discharge can be directed to the patient while on the auto-condensation couch, but should it be necessary to localise the effect of the "effluve," a suitable electrode connected to the apparatus must be used.

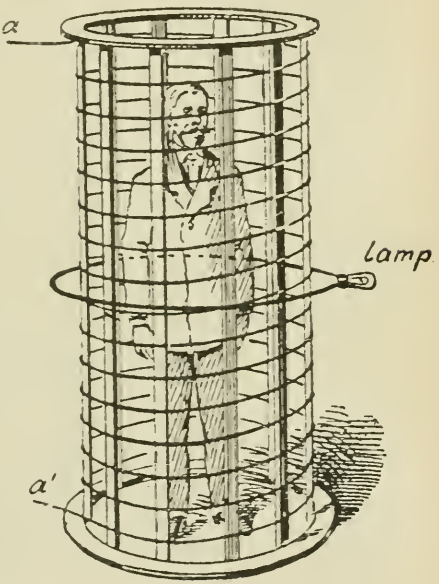


Fig. 45.—Auto-conduction with large solenoid.

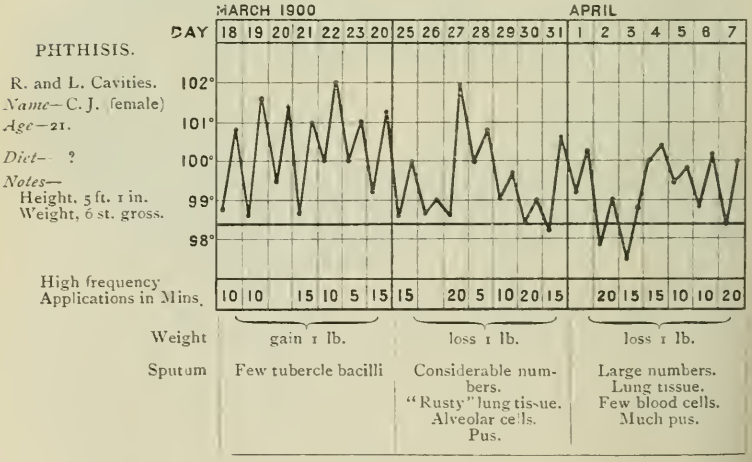
Another method, which may be called bi-polar treatment, is to use the flexible electrodes, which can be adjusted to any particular part of the body, and to use electrodes of such shape and size as the particular case demands.

Speaking generally the effects of high frequency currents are: (1,) Increase of the power of digestion; (2,) Increase of rate of pulse during the actual application of the currents, more especially in phthisical patients; (3,) Increase of respirations, which after a time become deeper in character; (4,) Increased action of kidneys; (5,) On tubercle bacilli, attenuating their virulence by stimulating them to excessive overgrowth. In addition to the above, D'Arsonval experimented on animals and men, and observed that the output of CO_2 was raised from 17 litres to 37 per hour, and the production of heat was increased from 79 calories to 127 per hour.

PULMONARY TUBERCULOSIS.—In treating the first forty-three consecutive cases,[1] all of which were picked for the severity of their

symptoms, it was quickly found that general electrification was better than local. The effects may be more readily understood if we take the several symptoms, &c., *seriatim*, in a typically severe case of pulmonary tuberculosis.

Fever.—We will presume that for many weeks the clinical thermometer has shown the usual evening rise and morning fall of, say, a couple of degrees. After a few applications the temperature acts to the stimulus, and if the individual sittings be long, so in proportion will be the height of the rise of temperature we can produce. This in a severe case may be to 103° or so; but in from twelve to twenty-four hours it has come down as a rule, below the patient's lowest point, and as we persist or desist in the application so does the temperature rise or fall. Most cases will react to the influence of the high frequency currents within twenty-four hours; others may take a few days. The more severe the case, the more quickly does the reaction take place. However much the temperature rises, it will generally be found down to, or below the patient's usual figure within forty-eight hours, so that the dose can be readily regulated, and the patient only given as much as he can comfortably bear.



The chart shows a fairly typical temperature in a severe case under treatment; for the next three weeks it never rose over 99 degrees; for the following eight weeks it never rose over normal, and generally was subnormal; then daily observations were stopped. The weight increased 1 lb. during the first week; lost 1 lb. for next two weeks;

then steadily gained 1 to 2 lbs. for the following eight weeks. During the fourteenth week of treatment from the commencement of "high frequency" the patient "put on" $3\frac{1}{2}$ lbs. in that week. Her weight (in clothes) was 6 stone, and height 5 ft. 1 in. During the fourteen weeks' treatment she gained 1 stone $4\frac{1}{4}$ lbs. Two months after, with no treatment, she weighed (in clothes) 7 stone 13 lbs., which she has maintained for past twelve months. The applications were fifty in number, and varied in dose from five to twenty minutes; with present apparatus half that time would probably have been sufficient. After the third week twenty-minute doses were given on an average twice a week. In March, 1901, twelve months after, five applications of thirty minutes' duration given on five consecutive days could only raise the temperature to 99 degrees in the evening and 98·2 morning. When the patient can be exposed to the currents for over half an hour daily for one week, and it is found that during the whole period the temperature remains steady at normal and subnormal, we may safely predict that the disease is, to say the least of it, arrested.

Sputum.—The consistency of the sputum is interesting. At first, besides tubercle, we get very quickly after the application of the high frequency currents, lung tissue and a few blood cells, both of which may greatly increase, the former showing the alveolar arrangement, and the latter may be in great numbers, producing the typical "rusty" sputum of pneumonia; pus is often found. Later on the sputum clears, leaving only a few bacilli and mucus. In eight cases noted, semi-calcareous nodules were expectorated. The sputum, which at first is generally muco-purulent, and may be offensive, loses its offensiveness and becomes less coloured. Generally in the course, during a varying time extending from a few weeks to a month or more, it is very heavy and sinks. As the patient progresses it becomes lighter in weight and whiter in colour, far more serous and easy to "get out."

Tubercle.—The tubercle bacilli, which are usually present in fair numbers, quickly begin to increase, and after a few applications are greatly increased; they soon, however, form clumps, and get misshapen, short and stumpy, and generally curved, and take the stain far more readily than before. After a time they begin to decrease in numbers; and later, when the patient is obviously getting better in every respect, they may cease entirely, but may reappear in the sputum, a few at a time, after weeks of absence. The bacilli seem to follow the course described by Forbes Ross and Norris Wolfenden[2] in their paper on the "Effects produced in Cultures of Tubercle

Bacilli by exposure to the influence of an X-ray Tube." They say, in conclusion, "There is not the smallest doubt that X-ray stimulation does not kill tubercle bacilli, but stimulates them to excessive overgrowth, and only affects them adversely by attenuation from overgrowth."

Quite recently Lagriffoul and Denoyes,[3] of the Montpellier Faculty of Medicine, have published a further series of experiments on the action of high frequency currents on tuberculous guinea pigs, and have proved that an actual inflammation is produced around the pulmonary foci, that finally this abates and leaves the lung clear of the bacilli. The present writer frequently found that the sequence of events was: Increase of bacilli, higher temperatures, rusty sputum, lung tissue, pus, leucocytes, then all gradually reduced to convalescence. Practically a necrotic process, and most marked in the "large cavity" cases. M. Dimitriewski, of the University of Tomsk, has been working with various toxins with a like result; the toxins losing their power and becoming innocuous.

Cough.—This is quickly relieved as the sputum increases, though a dry cough without expectoration may persist many months.

Perspiration.—When the temperature has been raised by the treatment, the patient, of course, may feel rather worse, *i.e.*, lassitude, and the sweats on the fall of the fever are sometimes large in amount; also during this period the body weight may decrease, or, at all events, remain stationary. This was found in many cases where the fever increased, and in spite of the patient taking presumably a much more nutritious diet, still a slight weekly loss was observed. This should be regulated by the physician giving a dose to stimulate the bacilli to maximum overgrowth with the minimum tax on the patient's strength, etc.

Body Weight—As a rule steadily increases with the improved digestion. A pound a week from the start may be scaled; sometimes the patient remains stationary for a week or so and then puts on several pounds as if to make up for lost time. A common occurrence was a gain of 14 lbs. in three months.

Pulse.—From a vast number of observations it appears that the pulse-rate is increased 20 to 30 beats during the actual application of the currents, but in a few hours or less it regains its usual rate, that is in tuberculous subjects; in others the increase is much less marked. In slightly neurotic cases it may be irregular.

Anæmia.—The mucous membranes in a few weeks look brighter, and the skin becomes more pink, looking and acting more normally. Congested capillaries of the cheeks rapidly disappear; perhaps the

general lowering of the temperature causes the "hectic flush" to go, or, may be, the increased nutrition of the skin masks it.

Clubbed Fingers.—Follow the usual course of a phthisical patient when recovering from the disease. The nail edges become more square and the free margins elevated. The fingers between the inter-phalangeal joints thicken from the deposition of fat.

Menstruation.—Was mostly absent, irregular, or pale, and very generally scanty; improved very rapidly under the treatment. The same phenomenon was observed in three cases of severe chlorosis unassociated with phthisis. In one case the menses had been absent for over nine months; after six bi-weekly applications, became normal in every respect.

Physical signs in the lungs in a slight degree may often persist long after the patient has gained the normal weight for height.

Over forty cases have been treated in London, which can, at present, hardly be considered as a first-class health resort; but it is probable that the application of high frequency electrical currents in sanatoria and like institutions will greatly swell the number of so-called cures. It is a remedy that should only be administered by medical men, as it needs as much care as any other therapeutic agent.

TUBERCULAR LARYNGITIS.—This seems to follow the same course as the pulmonary variety.

LUPUS.—Owing to the softness of the brush discharge or "effluve," the whole area or any one side of the face can be treated at one sitting. A reaction can always be produced, and with the particular apparatus here described, the length of each sitting has never exceeded ten minutes' duration. The after discomfort is slight. An average untouched patch of say 3 × 3 inches, should be completely healed in three months, during which time the applications would have been about forty in number. From all points of view, it may prove that this is the best form of treatment for lupus.

REFERENCES.—[1]*Brit. Med. Jour.*, Oct., 1901; [2]*Arch. Röntg. Rays*, Aug., 1900; [3]*Ann. d'Electrobiol.*, March, 1901.

PITUITARY GLAND. (See "Metabolism.")

PITYRIASIS VERSICOLOR. *Norman Walker, M.D.*

Matzenauer[1] has succeeded in obtaining pure cultures of the fungus of this disease. The difficulty is to start the cultures. Ordinary media seem useless, but in some "Finger's" epidermin-agar colonies appeared after six days, and these grew luxuriantly upon ordinary media. Inoculation experiments were successful, typical patches developing on the skin.

REFERENCE.—[1]*Arch. f. Derm.*, May, 1901, p. 163.

PLAGUE. *James Cantlie, M.B., F.R.C.S.*

During the year 1901 plague has prevailed in an epidemic form in India, in Hong-kong and probably Southern China, and in Mauritius. Outbreaks of plague have been reported in Cape Colony, in Egypt (a recrudescence), in Naples, in Liverpool, in Glasgow (a recrudescence); and in several of the Turkish ports, Smyrna, Constantinople, etc., a few cases of plague have been noted. In India the Bombay Presidency has suffered most severely, but in the Mysore State also a serious mortality from plague prevailed. In Calcutta, in Lower Bengal and in the Punjab cases of plague appeared, at times in considerable numbers, and then again seemed almost to disappear, but never wholly so. In Hong-kong a severe epidemic of plague prevailed during 1901, a marked feature of the disease being that a fair proportion of those attacked were Europeans. In Cape Town an outbreak of plague occurred which at one time threatened to be serious. Considering that Cape Town constituted the base of British military operations in South Africa at the time, the outlook was alarming. Prompt measures, however, being at once taken, the outbreak proved well nigh abortive, and during the autumn a few cases only were reported from time to time.

The occurrence of plague cases in the Everton district of Liverpool in October, 1901, proved how insidious a disease plague is, and how unexpectedly it may appear in the midst of a community unexposed so far as the source of infection can be traced. In Glasgow, in October, 1901, four cases of plague occurred in a hotel in the city, but no further cases were recorded. Since the autumn of 1900 no cases of plague were met with in Glasgow until the outbreak during October, 1901.

The Part played by Rats.—That plague is carried by rats has come to be a rooted belief, and there is certainly a great deal of well-founded evidence in favour of it. Ashburton Thompson[1] accords to rats the principal part in the dissemination of plague. Many observers have come to the belief that plague is primarily a disease of rats, and that man, in common perhaps with several of the lower animals, is a host of the rat-plague bacillus on occasions. Some believe that the disease in rats is of a different nature from that occurring in man, and that the bacillus affects man under special hygienic conditions only. This theory implies that rats are in every epidemic to be found infected by plague. This supposition may or may not be true, but it certainly has not been proved in every instance. In the Glasgow outbreak in the autumn of 1900 no rat in the district in which

plague cases occurred was found infected by plague. On the other hand, in the autumn of 1901, when plague re-appeared in Glasgow, the rats of the dwelling in which plague occurred, were found to be infected.

Davies[2] endorses Ashburton Thompson's conclusions, and doubts the infective power of human beings, believing that *plague is connected with premises*, and not with either people, clothing, goods, or food. When plague cases seem disseminated in a community, it is almost invariably found that the people struck down have congregated together at work or for some other purpose in a common dwelling, and that the dwelling is infectious owing to the presence of plague-infected rats. To the rat also is ascribed the power of carrying plague over-sea. *Ships* are plague disseminators merely from the fact that they have plague-infected rats on board, and not because some of the passengers or crew have had plague during the voyage.

According as this belief of the rat being the sole agent in transmitting plague is absolutely or but partially accepted, so will the subject of quarantine and the steps to be taken with "contacts" be affected. A ship would be considered infective only so long as there were plague-stricken rats on board, and it is doubtful whether any precautions need be taken with "contacts" at all. These beliefs, if acted upon, would sap the whole fabric of quarantine, etc., as practised at the present day, and perhaps rightly so. Yet are there drawbacks to so positive a conclusion. *Pneumonic plague* is doubtless communicable from the sick to the healthy directly; and, therefore, for at least one variety of plague, the conclusion that the rat is the sole disseminator does not hold good.

How the rat spreads plague is at present unsettled. There are at least two methods of transmission possible. One is that the rat, by its *excretions*, may infect human food and so infect man; the other is that the *parasites* in the rat become infected by plague bacilli, and then, biting man subsequently, infect him. Both of these methods find supporters, but the rat-flea mode of infection is the more believed in. It is a fact that the parasites of the rat's coat are infected by plague bacilli, and it is a fact that the fleas, etc., leave the rat shortly after death. It only remains, therefore, for the rat-fleas to bite man, to complete the circle of infection; but this is not yet proved. It is, on the other hand, stated that the fleas, etc., of the rat's coat do not bite man, and that therefore it is impossible for them to thus transmit plague. Against this it may be stated that although the rat-fleas do not normally attack man,

they may do so on occasion, as when a person handles a rat just killed. So pointed is this possibility, that persons engaged in the destruction of rats are forbidden to touch the dead animal with their hands, but are encouraged to use tongs to transfer the dead rat to either a bucket with disinfectants or to a fire to be burnt.

To sum up our present knowledge of the relationship of rats to plague, it may be said: (1,) Rats are believed to play a prominent part in the spread of plague; (2,) The rat may be the sole disseminator of plague; (3,) The fleas, etc., of the rat's coat may be the medium of transmitting plague to man; (4,) Ships are carriers of plague only in as much as they are infected by rats; (5,) Plague is primarily a disease of rats, but affects man under certain conditions; (6,) The fact that several outbreaks of plague have been recorded, in which rats were not found to be affected, tends to modify the belief that the rat is the sole or primary transmitter of plague.

Pestis Minor.—Evidence in regard to "pestis minor" being a definite ailment is increasing. It may be described bacteriologically as the form of plague in which an *involuted form* of the bacillus develops on culture media. As a rule it is not found in freshly-stained microscopic specimens; it grows, if at all, slowly and haltingly on culture media, and the cultures exhibit an involuted form of the bacillus; it usually gives negative results when injected into animals. In one series of cases negative evidence is the result of all tests; in others the microscopic and bacteriological evidences are positive, but it is seldom all obtain.

The usual signs and symptoms of pestis minor are: Enlarged glands, usually in the groin, frequently multiple and bilateral; if careful search be made, some of the glands in the axilla or neck, or both, may be found enlarged as well. The skin over the glands remains of normal appearance for two or three weeks, when the glands in the groin may subside or suppurate. The tongue is coated, white, and dry; the conjunctivæ are injected; the temperature ranges between 100° and 102·5°, or higher. The spleen is frequently felt to be enlarged. In even so marked a condition as that described, no plague bacilli may be found, only streptococci. It is the occasional presence, and the more frequent absence of involuted forms of plague bacilli in pestis minor that has caused the confusion in the recognition of this ailment, which is now held to be an invariable concomitant or precursor of plague. The bacteriologist, relying upon experimental methods of investigation, is apt to mislead opinion in regard to the importance of this ailment as an indication of the near approach of true plague. Clinically, however, the signs and

symptoms are scarcely to be mistaken, and they indicate a specific disease which is unknown at other times than when plague threatens, and they constitute a valuable warning if read aright.

Pestis Ambulans.—When plague is about, mild cases of true plague are met with which remain undiagnosed, or are only accidentally recognised. A well-marked case of this nature was notified in Liverpool.[3] A boy, shortly after an injury in the football field, developed swelling of the glands on the groin. He was admitted into hospital, and as the glands continued to enlarge, they were removed. The fluid from the glands was submitted to bacteriological and other tests, and proved the boy to be suffering from plague. No infection could be traced, nor did anyone who came in contact with the boy contract plague. Several cases of plague shortly afterwards were, however, recognised in other districts of Liverpool. The same is now being observed in regard to cases of pneumonic plague. What must also be considered ambulatory cases occur in the case of pneumonic plague. In Cape Town, Professor W. R. Simpson testifies to the fact that plague bacilli were found in several cases of what appeared to be ordinary mild pneumonic conditions during the time plague prevailed there during 1901. In Bombay also it is a well-known fact that when the mortality from plague decreases, it frequently happens that respiratory ailments increase. These observations point to the fact that, as in other prevalent diseases mild cases occur, so in plague mild or ambulatory cases would be frequently found were investigation extended beyond the more acute cases of the disease.

Agglutination by Plague Blood.—Dr. Klein,[4] F.R.S., describes experiments made concerning the statement that the blood of persons convalescent from plague possessed the power of agglutinating plague bacilli of culture. Klein's difficulty was to obtain an emulsion in which the bacilli are isolated and evenly distributed. He succeeded in obtaining this emulsion by shaking up a particle of gelatin surface culture of plague bacilli in 0·75 per cent. of physiological salt solution. To this gelatin-salt-emulsion bouillon was added in the proportion of one of bouillon to twenty of emulsion, when the result of positive agglutination is evident in from twelve to fifteen minutes. From experiments with normal human blood, with normal mouse blood, and with blood of rats which had been injected first with Haffkine's prophylactic, then with small and finally with large doses of living plague cultures, Klein concludes that the blood of rats convalescent from plague has positive agglutinating action on an emulsion of plague bacilli. In all probability also this agglutinating

action is applicable in the case of human beings convalescent from plague, or after a course of treatment by Haffkine's prophylactic.

Mortality from Plague.—The effect of an outbreak of plague amongst people of a pure European stock has been nowhere better exemplified than in Sydney, New South Wales. Of 303 persons attacked 103 died. The numbers show that plague, during at any rate its initial outbreak, can be limited in its extent; and that the mortality amongst Europeans is far below that observed in China and in India, where the deaths amongst the natives of these countries amount to over 90 and 65 per cent. respectively. In Cape Town one peculiar phenomenon was the small number of Chinese attacked in proportion to individuals of all other races, also the small case mortality of the Chinese who were attacked. This is in such marked contrast to what obtains in China as to be altogether remarkable. Possibly the explanation lies in the fact that the Chinamen who go to South Africa are of the better-off class, and therefore possess greater stamina to resist disease.

Professor R. Tanner Hewlett[5] gives the following directions for the bacteriological *diagnosis of plague.* (1,) Make smear preparations from the blood and with fluid from buboes; stain with methylene blue for three minutes, wash, dry, and mount in Canada balsam, and examine with a $\frac{1}{12}$ inch oil immersion lens. Another method is to stain with weak aniline gentian violet (1-3); rinse with weak alcohol (1-1) for two or three seconds, and then wash, dry, etc., as above. Other preparations similarly obtained should be stained by Gram's method. The diplo-bacilli characteristic of plague are decolourised by Gram's method, whilst the cocci and streptococci which are frequently observed in the preparations are stained by Gram's method. (2,) If the characteristic bacilli be found, a fresh hanging drop preparation should be made and examined for motility. The plague bacillus is non-motile. (3,) Make cultivations on surface agar and gelatin and two or three broth cultures; in twenty-four to forty-eight hours the cultures will be developed and the naked eye and microscopical characters may be noted. (4,) Inoculations of about 0·25 to 1 c.c. of fluid from a bubo or an emulsion of the material may be made into the subcutaneous tissues of the abdomen of two or three guinea-pigs; death ensues in seven days. (5, Agglutination tests may be tried.

TREATMENT.—*Serum Therapy of Plague*[6].—The serums of Yersin, Roux, and Lustig are the three best known fluids employed for anti-plague inoculations. Roux and Yersin's fluids are made by injecting horses, first with increasing doses of cultures of the plague

bacillus in which the bacilli have been killed by exposure to a temperature of 65° C., and afterwards with "unkilled" cultures of the plague bacillus. The cultures are made either in broth or emulsions of agar. Clemow[7] came to the conclusion that Yersin's serum was "without influence for good or evil." Roux serum was employed by Calmette in Oporto and reported upon most favourably. Calmette recommends that all patients should be treated as soon as possible by an intravenous injection of 20 c.c. of the anti-plague serum, followed by two subcutaneous injections of 40 c.c. each. On succeeding days 10 c.c. to 40 c.c. of the serum should be given subcutaneously, according to the gravity of the case, and continued until the temperature has been normal for two days. Zabolotony[8] thinks highly of Roux serum; he considers the preventive dose to be between 25 c.c. and 40 c.c., and as a curative agent the amount should be between 50 and 100 c.c. The essence of the process of the recovery is the phagocytic activity of the leucocytes, and it is by stimulating and exciting this that the serum acts.

Lustig's serum[9] has been favourably reported upon by Choksy. The serum consists of a solution of plague bacilli in a weak caustic potash, precipitating the dissolved nucleo-proteid in the solution with acid, and re-dissolving the precipitate in weak sodium carbonate solution. With this solution Choksy treated 480 cases, of whom 328 died and 152 recovered, reducing the case mortality thereby about 10 per cent. Clemow[10] did not find Lustig's serum markedly beneficial.

Haffkine's vaccine consists of broth cultures of the plague bacillus killed by heating to 65° C.; the fluid is injected in doses of about 3 c.c., and the protection so conferred lasts for some months at least. It reduces the incidence of the disease by about 30 per cent., and the mortality among the inoculated by about 80 per cent. The immunity accorded by Haffkine's vaccine is not manifest until about a week after vaccination.

REFERENCES—[1]*Report of Plague* in Sydney, N.S.W., during 1900; [2]City of Bristol *Report on Plague*, 1901; [3]*Lancet*, Nov. 9, 1901; [4]*Ibid.*, Feb. 16, 1901; [5]*Treatment*, Nov., 1900; [6]*Ibid.*, Nov., 1900; [7]*Lancet*, 1899, i, 1,212; [8]*Brit. Med. Jour.*, July 28, 1900; [9]*Lancet*, July 28, 1900; [10]*Ibid.*, 1899, i, 1,212.

PLEURISY.

Prof. H. P. Loomis, M.D., New York.

Salanoue-Ipin[1] has endeavoured to ascertain by means of statistics some information concerning the important question of prognosis in pleurisy. It has been stated that all cases of pleurisy are tuberculous unless proved to be otherwise, and consequently primary

pleurisy does not in the opinion of some exist. The investigations of Kelsch Vaillard and others appear to support the conclusion that the vast majority, if not all, of cases of pleurisy not appearing in the course of some definite disease result from an invasion of the pleura by tubercule. Dieulafoy, Netter, Débove and Achard, on the other hand, believe that there are many cases of a simple primary pleurisy which are non-tuberculous. The importance of Salanoue-Ipin's observations is that they have been collected under the same circumstances, namely, from sailors in the French navy. All manifestly tuberculous cases were eliminated, as well as pyæmic or other forms of pleurisy having a definite history. Salanoue-Ipin collected 352 cases of primary sero-fibrinous pleurisy. Thirty-two died during the course of the attack, and of the remaining 320, 131 died after leaving hospital. Of these eighty-four showed definite tuberculous affection, in nineteen the cause of death was unknown; in thirteen it was independent of tubercle, and fifteen lost their lives at sea. Thus the enormous proportion of tubercle is striking, and very probably the nineteen cases of which the cause of death could not be ascertained included other cases of tubercle. As a rule, tubercle seems to appear very shortly after the outbreak of pleurisy, while if several years have passed it becomes much less common.

[NOTE.—In Great Britain cases of simple inflammatory pleurisy are so comparatively common, that the above conclusion will hardly be accepted. The close connection between pleurisy and the rheumatic diathesis must also be taken into account.—ED. *Med Annual*].

The difficulty sometimes experienced in detecting fluid in the pleura, especially in childhood, is acknowledged by all. A method, therefore, by which the shadow of the fluid can be actually seen must obviously be of great use in diagnosis. That the Röntgen rays are capable of showing the presence of fluid in the pleural cavity is now a fact beyond question. In doubtful cases of pleural effusion the Röntgen rays will enable us to say if fluid be present or not, and from the density of the shadow to give an opinion as to whether such fluid be serum or pus.

There is a difference of opinion as to the time of tapping in pleural effusion. Some believe that the fluid should be removed as soon as diagnosed, claiming that less structural changes are liable to occur in the pleura, and so interfere with a permanent cure. We believe that it is the duty of the physician in all cases of pleural effusion to allow two or three weeks at least to elapse before he interferes in any way with the fluid. It is of course best that this fluid should be absorbed through physiological processes if that is possible. If

symptoms develop which indicate that the fluid is present in sufficiently large quantities to cause dyspnœa or to interfere with the action of the heart or the other organs which are adjacent to the part involved, then **Aspiration** should immediately be resorted to. It is usually held that even if such symptoms are not present and the effusion is in the chest to the height of the third interspace, the fluid should be removed, since such a large quantity of fluid cannot fail to produce pressure which will exercise a deleterious influence upon surrounding parts.

It is a noteworthy fact that when only a small proportion of the total fluid present is withdrawn by aspiration, this operation often causes the absorption of the balance without any additional interference, since, as soon as undue pressure is relieved, physiological functions can assert themselves and normal processes of absorption go on. (See also " Empyema ").

REFERENCE.—[1] *Arch. de Méd. Navale*, Nov. 4, 1900.

PNEUMONIA. *Prof. H. P. Loomis, M.D., New York.*

Pneumonia is one of the most fatal diseases. Abundant statistics show that it rivals pulmonary tuberculosis in its high percentage of mortality. The U. S. Government reports of the year 1901 show that it is the one disease whose mortality is steadily increasing, all other diseases showing in the past ten years a diminished mortality. The increased prevalence of influenza has been suggested as a cause of this increase. The large life insurance companies pay more death claims from pneumonia than from any other disease. One writer states that of all persons who reach fifty years of age in the United States, in good health, one-fourth die of pneumonia ; and of all who reach seventy-five years, nine-tenths die of pneumonia.

The records of hospitals extending back forty years teach " that however varied the treatment may have been, the mortality of the disease was essentially the same." Hospital statistics show that the mortality ranges from 20 to 40 per cent. It has been stated that " 75 per cent of the cases of true croupous pneumonia are caused by the pneumococcus alone ; about 15 per cent by that in combination with the influenza bacillus, streptococcus, staphylococcus, colon bacillus, etc. ; and the remaining 10 per cent—a very liberal allowance—by various bacteria other than the pneumococcus."

Eason,[1] out of fifty-four cases of lobar pneumonia, found twenty-four patients with unequal pupils, the inequality being due to unusual dilatation of one pupil. Twenty-one of these had the large pupil on the side on which the signs of pneumonia were detected.

He suggests that the condition of the pupils may be explained by the irritation which the pneumonia causes to that part of the sympathetic system which is known to act as the dilator of the pupil. There are other indications that the sympathetic in this region is irritated in pneumonia, as the flushing and pallor of the face, and in some cases a distinct though not very great protrusion of the eyeball.

Pneumonia in the Obese.—Mallard[2] points out that pneumonia in the obese never has the same severity of onset as ordinary cases. Pain in the side is usually constant, and may be very severe. Cough is a very troublesome symptom ; the initial rigor, which is so characteristic and severe in ordinary cases, is in the obese replaced by several rigors not so severe and very similar to those met with in pleurisy ; although the temperature is elevated it does not attain the same degree of elevation as in other cases. Dyspnœa, although always present, is never very severe. The heart shows evidence of failure from the beginning. There is, therefore, considerable tendency to general congestion of a passive kind. Albuminuria is frequent. The prognosis is always serious, and in seven cases quoted the termination was fatal, death, frequently sudden, being due to cardiac failure or asphyxia.

TREATMENT.—Simon Baruch[3] says that **Cold Water** meets all the indications for which powerful remedies were formerly applied, and it accomplishes this without their depressing effects. What affords more comfort to a child suffering from pneumonia than a tub bath with good friction in water of 95°, reduced during five to eight minutes to 85° F. ? A few baths of this kind repeated every four to six hours, without fuss or confusion, at the bedside (not in a bath-room) calm the respiration, reduce temperature, promote sleep, slow and strengthen the pulse, and refresh the oppressed nervous system. In the interval between the baths he is in the habit, if the temperature and pulse are high, of wrapping around the upper half of the trunk a compress made of three folds of old linen and wrung out of water at 65° F. This may be covered by a wider bandage of one layer of thin flannel, snugly secured over the compress. By renewing this compress every hour the good effects of the bath are maintained, and their frequent repetition is rendered unnecessary. In the adult patient the tub bath is not so useful, because it involves more trouble to, and disturbance of, the patient, especially if pleurisy be present. Here the wet compress, not too firmly wrung out of water at 60°, usually fulfils all therapeutic indications. Repeated every hour, or oftener, if it is hot when removed, its application causes a deep inspiration, a betterment of

the pulse quality, and an increase of urine. The latter is also enhanced by draughts of 4 to 6 ounces of water at 45°, administered regularly every two hours.

Barr[4] explains the causes of heart failure in pneumonia, and the means that should be employed to overcome this. He says the large majority of hearts make a desperate struggle for continued existence; the failure takes place from: (*a*) Granular degeneration of the muscular fibre induced by continued high temperature, and by toxæmia; (*b*) Low arterial pressure, which prevents proper nutrition of the heart and produces a syncopal condition; (*c*) The interference with the proper action of the respiratory pump from any cause leads to overloading and ultimate failure of the right side of the heart. Our indications for treatment, therefore, are: (*a*) To lower the temperature and control the inflammatory process at the earliest possible period before stagnation of the blood and hepatisation have taken place, and thus preserve, so far as possible, the integrity of the respiratory apparatus; (*b*) To maintain fair systematic blood pressure; and (*c*) To keep the respiratory pump acting by lessening the frequency and increasing the depth of the respirations.

William Porter,[5] St. Louis, suggests the combination of **Venesection** and injection of **Salt Solution**. The idea is that, whilst by venesection we attempt to relieve the tendency to right-sided heart failure and remove a certain amount of toxin-laden blood, we at the same time, by means of the salt solution, increase the pulmonary circulation, accomplish dilution of the toxins which remain, and increase the oxygen-carrying capacity of the blood. The amount of blood to be removed is not necessarily large—about 8 to 12 ounces. The salt solution recommended is a modification of Jenning's, in which the proportion of chloride is increased. The formula is as follows:—

R	Sodium Chloride	grs. xxx	Sodium Phosphate	grs xl
	Potassium Chlorate	grs. lx	Sodium Carbonate	grs. lx
	Sodium Sulphate	grs. lx	Distilled water to make	℥

One part of the solution in sixty of distilled water.

Brewers' Yeast seems to be gaining ground as a recognised therapeutical agent. P. Marie[6] reports that he has used it in eight cases of pneumonia, and all of them ended in recovery. The first case was that of a man, sixty-eight years old, who had numerous and very painful boils with his pneumonia, and on that account the yeast was prescribed for him. His unexpected recovery from the pneumonia led Marie to employ yeast in the other cases.

A. Fränkel[7] records his experience in the use of large doses of **Digitalis** in the treatment of pneumonia. He does not give the immense doses recommended by some authors, limiting himself to at most 1 drachm a day. He uses this treatment only in the early stages of the disease, because about the time of the crisis digitalis is likely to cause bradycardia and irregularity of the pulse. He also excludes cases that show distinct cardiac weakness, as they are not likely to stand the treatment. He observed progressive fall of the temperature and pulse, the general improvement being very pronounced. The local process remained practically unchanged. Maragliano[8] also states that he has established the fact of a specific action of digitalis on the pneumococcus, since he finds that small amounts added to the cultures will kill the organisms, or when added to injections of the pneumococcus-toxin will neutralise this poison. To this action he attributes the favourable action in pneumonia of large doses of digitalis.

J. N. Snively, of Philadelphia, has published an interesting paper on the result of the treatment of croupous pneumonia with **Anti-pneumococcic Serum.** He says the serum for pneumonia is an anti-infectious serum—that is, one produced by an experiment animal in response to repeated injections with living germs. The protective power of such a serum rests in its ability to destroy living germs, of the same kind, in the body of another experiment animal, or in man. It therefore differs in its preparation and mode of action from the more familiar diphtheria and tetanus protective serums, which are antitoxic. These latter are formed by injecting horses or other experiment animals with toxic products of bacteria, not live germs, and their activity is exerted in neutralising the toxins. The clinical symptoms of pneumonia point to the formation of a very strong poison, or a milder poison in very large amounts. The strength of anti-pneumococcic serum can be demonstrated by its ability to protect susceptible animals against many times the fatal dose of living germs. Speaking of a number of cases observed by him, in which the anti-pneumococcic serum was used, he says: "The number of cases is still too few to warrant the expression of a definite opinion as to its final value as a therapeutic agent. As a rule the cases did better than was expected, but certainly no striking curative effects were apparent. The cases did not develop pneumococcus blood infection, and it seems probable that the serum may be able to prevent a general infection from taking place from the diseased lung, even though it may fail to influence the local process." The serum is known to lose its strength after a few months,

and becomes unreliable if very old. The freshest possible serum should be used, and used early in large doses. It is supposed to increase the leucocytes in the blood.

Snively reports a number of cases treated by himself, and also the result of his investigation of 106 cases treated with the anti-pneumococcic serum by other observers. His conclusions are as follows: (1,) That the serum is harmless even when administered in large doses; (2,) That the action of the serum is favourable, especially in early cases, and markedly so where we do not have mixed infection, and where a freshly drawn serum is available, and where it is used in sufficiently large doses. It certainly lowers temperature, relieves pain, ameliorates symptoms, shortens the attack by hastening crisis, brightens the patient, and starts him earlier and more surely on the road to recovery.

We cannot expect results if the treatment is delayed until the disease has had time to do its destructive work on the various organs, as the heart muscle or the endocardium, etc., or until we have profound toxæmia. We cannot expect the remedy to restore tissues that have been destroyed by the disease, nor can we expect it to undo the damage that has been done before it is administered. And it is supposed to combat the pneumococcus alone, and is not a general germicide, so could not be expected to have the same effect when we have mixed infection, as where only the pneumococcus is engaged.

Babcock (of Chicago) recommends the frequent administration of **Diffusible Stimulants.** He advocated the use of fifteen drops each, every twenty minutes, of aromatic spirit of ammonia, compound spirit of ether, compound spirit of lavender, and tincture of valerian, keeping them up day and night so long as danger exists. It should be remembered that their action is very evanescent, and therefore they should be administered from two to three times an hour. Their purpose is to stimulate the failing heart and enable it to overcome the influence of capillary stasis. Alcoholic preparations, as champagne and high wines, are also useful in small, frequently repeated amounts.

Aside from pure heart stimulants in these cases, the author believes that nothing is so efficient as full hypodermic doses of **Strychnine** as a cardiac tonic, $\frac{1}{30}$ or even $\frac{1}{20}$ of a grain every two hours, and in very urgent cases even hourly. **Caffeine**, by preference the valerianate of caffeine, in grain doses, is also thrown under the skin every two hours or oftener. This remedy not only acts as a cardiac tonic in conjunction with the strychnine, but also exerts

a vaso-constrictor effect. Surprising results following this treatment have been noted, the pulse increasing appreciably in strength and the pulmonic second sound becoming louder. He recommended also that administration be given both per rectum and under the skin of a physiological **Salt Solution.** A special apparatus is not necessary, since an excellent gravity apparatus can be constructed out of an aspirating needle and an ordinary fountain syringe. From one to two pints may be allowed to flow slowly into the subcutaneous cellular tissue, and a convenient site for administration is the loose skin of the axilla or the lateral lumbar region. In those cases in which this treatment does good, the pulse grows fuller, stronger, and somewhat slower, while in the course of an hour there is an increase in the volume of the urine. This treatment may be repeated as often as required. It is believed that the frequent employment of this subcutaneous infusion of salt solution has saved life in these cases.

REFERENCES.—[1]*Scot. Med. and Surg. Jour.*, April, 1900; [2]*Thése de Paris*, 1900; [3]*Inter. Med. Mag.*; [4]*Brit. Med. Jour.*, June 16, 1900; [5]*Phil. Med. Jour.*, Dec. 15, 1900, p. 1,148; [6]*Trib. Méd.*, May 23; *Lyon Méd.*, June 3; [7]*Therap. d. Gegenw.*, Jan., 1899; [8]*Gaz. deg. Osped. el d. Clin.*, No. 31, 1898.

PNEUMONIA (Arthritis in.) *R. Hutchison, M.D.*

Edward J. Cave[1] describes a case of pneumonia complicated by suppurative inflammation in the left shoulder joint, in the pus from which the presence of the pneumococcus was demonstrated, and gives a table of all the previously recorded cases of this rare condition. The affection is essentially one of adult and advanced life, and is far commoner in males than in females. Both these peculiarities may stand in relation to the predisposing influence of previous damage to the joint. The arthritis is commoner in the upper extremity than in the lower. In nineteen cases inflammation was confined to a single joint; in the remainder two or more joints were involved. With the exception of the hip the larger joints seem more prone to be affected than the smaller. In twenty-seven of thirty-one cases, one or more of the joints suppurated, in one case the occurrence of suppuration was doubtful, and in three cases there was no suppuration, the fluid effused into the joint being of a sero-fibrinous character. In all of the cases with one exception, the pneumococcus was demonstrated in the fluid in the joints, but cases have been noticed of suppurative arthritis following on a recent attack of pneumonia, in which the pus on examination proved to be sterile.

The association of the arthritis with other localisations of pneumococcic infection is the rule, and this associated lesion is commonly in a vital part, and more directly threatening to life than is the arthritis. Often there has been a widespread infection of the system by the virus, with malignant endocarditis (six cases), pleurisy and empyema (five), pericarditis (two), nephritis (three), meningitis (six), and peritonitis (one). In some of the cases there has been a simultaneous inflammation of more than one serous membrane. This tendency to infect more than one serous membrane at the same time, is also pronounced in certain cases of tuberculous and common septicæmic infections.

The symptoms may vary in severity from pain and slight swelling limited to a single joint, to an intense inflammatory œdema of the whole neighbourhood of the articulation or of a whole limb, with severe pain, heat, and redness, with abnormal mobility from destruction of the ligaments, and with grating of the bared surfaces of the bones. The fever is generally high (from 102° to 104°). The nature of the arthritis can be determined only by its association with pneumonia or other pneumococcic infection, and by bacteriological examination of the joint contents. The prognosis is grave, both as regards danger to life, and the ultimate restoration of function to the joint. In the cases that recover progress is slow, extending over many weeks, and the function of the joint is as a rule permanently impaired.

Little that is special need be said with regard to the treatment of this particular form of arthritis. In suppurative cases—which comprise the majority—there can be no hesitation in practising aseptic **Incision** of the joint, with flushing, drainage, and fixation, as in any other acute suppurative arthritis. In convalescence, stiffness and adhesion in and about the articulation must be treated on general principles, by **Massage**, by **Douches**, and other hydrotherapeutic measures, or by **Hot-air Baths**, and when it seems necessary by forced movements of the joints ; in all cases followed by suitable exercises for the restoration of wasted muscles and the preservation of the mobility that has been gained.

REFERENCE.—[1] *Lancet*, Jan. 12, 1901.

POLYPUS (Nasal). *W. Milligan, M.D.*

Lambert Lack[1] regards the ordinary nasal polypus as essentially a simple localised patch of œdematous mucous membrane, the œdema being the result of disease in the underlying bone. In an examination of fragments of bone from over thirty cases of nasal

polypi, changes were found of the nature of a rarefying osteitis. Clinically signs of bone disease may be discovered by digital exploration under general anæsthesia, or by the careful use of a blunt pointed probe, when spicules and loose pieces of bone can be felt.

The non-recurrence of growth after the removal of bone would also go to show the intimate relationship between the original condition of the bone and the secondary growth. Thorough clearing away of all diseased tissue under chloroform is recommended. The middle turbinated body, if present, may be removed by the spokeshave, and any large polypi by means of forceps. The lateral mass of the ethmoid should then be cleared away by means of a large adenoid curette (Meyer's), great caution being exercised when working in the region of the cribriform plate.

REFERENCE.—[1] *Jour. of Laryng.*, Feb., 1901.

PREGNANCY (Extra-Uterine).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

DIAGNOSIS.—In a minority of cases the accidents incidental to early tubal pregnancy are so far absent, or at least masked, that both subjective and objective symptoms and signs may point to intra-uterine pregnancy, and it is not until the time at which a futile effort at delivery is made that the abnormal condition is suspected. Such an instance occurred, within the writer's recollection, where a patient was admitted to the General Lying-in Hospital in London for her confinement; and it was only when a digital examination was made to determine the presentation, that the uterus was found to be empty. A similar case is recorded by Bromet[1]; even after the onset of spurious labour it was doubtful whether the case was one of extra-uterine gestation or of "missed labour." Four months later the uterus was explored, after which abdominal section was successfully undertaken. All the subjective and objective symptoms of ordinary pregnancy were present in this case; and there was nothing to lead to a suspicion of any other condition except the occurrence of some paroxysmal pains in the eighth month.

Usually the diagnosis of tubal gestation in the first three months is the point of chief importance, as it is also in many cases the point of chief difficulty. Early abortion and ectopic pregnancy often present very similar features; and Vineberg[2] relates a series of very instructive cases of both kinds in which the one condition was mistaken for the other. In some of them a mistake was quite excusable; in others but little excuse could be found for what Vineberg severely describes as "an egregious error." Careful examination, especially under an anæsthetic, will nearly always clear up the diagnosis;

it is mainly the symptoms that are ambiguous. Vineberg mentions two cases of uterine pregnancy in which the abdomen was opened, in one of them with a fatal result; in a third case the patient was saved from operation only by her delivery during the night before the proposed operation.

Vineberg, in reviewing the usual symptoms and signs of tubal pregnancy, points out that a period of amenorrhœa is by no means constant previous to the hæmorrhage consequent on tubal rupture; this is in harmony with the experience of most observers. He considers that the history of the discharge of decidual membrane is a very misleading symptom; nor does he think that there is anything characteristic about the nature of the pain. The symptom that has afforded him the strongest clue has been the occurrence of fainting-spells with the attacks of pain, but this may be absent, or it may be present in other conditions.

Currier,[3] in discussing early diagnosis, emphasises the fact that pregnancy *per se* produces certain changes, whether it take place inside or outside the uterus. These are the "ordinary" symptoms of pregnancy. Among the "extraordinary" symptoms which should lead to the suspicion of extra-uterine pregnancy, he first enumerates certain predisposing conditions, namely, retroflexion of the uterus, precedent sterility, disease or dislocation of the Fallopian tubes, a bicornate structure of the uterus, and precedent tubal gestation. We doubt, however, whether in the matter of diagnosis much weight can be attached to these. The three cardinal signs, according to Currier, in the order of their importance are hæmorrhage, chiefly internal; pain, which is usually paroxysmal, sharp and darting, and inclines the patient to relax the muscles of the thighs and flex the thighs upon the abdomen; and the presence of a pelvic tumour. In most cases an anæsthetic is required for the examination. He thinks that if a diagnosis cannot be reached with these and with the ordinary signs of pregnancy, the fault will probably lie with the examiner. The point which we should like most particularly to emphasise is the importance and value of examination with the help of an anæsthetic.

In connection with the diagnosis of internal hæmorrhage, Routier[4] raises the important question whether this condition occasions a rise or a fall of temperature. In a case of ruptured tubal gestation which he recorded the temperature was 102°, and this led him to think that he had to do with a suppurating hæmatocele. But at the time of operation there was no sign of suppuration. Other speakers following Routier had observed a rise of temperature as

the result of internal hæmorrhage. Pozzi had noticed this fact in 1893 (De La Nièce's *Thesis*). In great hæmorrhages, when the temperature rises for some time, this rise may be due to absorption of ptomaines. Tuffier observed a rise of temperature in hæmothorax; on tapping, the blood was found quite free from septic germs, and spontaneous absorption of the blood occurred. Hartman recorded that he had observed the same in gunshot wounds of the thorax, the blood proving aseptic. Marchant[5] publishes precisely similar instances of rise of temperature in a case of hæmothorax, in a case of hæmorrhage into the knee-joint after a street accident, and in another case of hæmarthrosis, due in this instance to simple fracture of the head of the tibia. The patient was a man, aged fifty-seven, in good health; the temperature on the third day reached 104·5°, and remained high for nearly a week without any evidence of inflammatory changes.

TREATMENT.—Malcolm[6] expresses himself as follows, and puts in a strong plea for early operation in every case. His remarks are quoted in full, as the argument for early operation, with which I entirely concur, could not be better stated:—

"When the child is believed to be alive I consider the proper treatment to be to remove it by operation without delay. If the condition is diagnosed before the tube bursts, the operation should be simple and safe, and there cannot be any object in waiting to see how much hæmorrhage will take place or whether the pregnancy will go on to term. Later, if the fœtus has escaped the dangers connected with the rupture of the Fallopian tube, to delay in operating is still to wait to see if a worse thing will happen. Under any and all circumstances it seems to me that, so long as the embryo is alive, danger must increase, and the risks of an operation must become greater with delay, whilst there is no reasonable prospect of avoiding an operation altogether. The only circumstances in which I should be inclined to waver in advising immediate operation when the child is alive, would be those in which a pregnancy had advanced to the end of the sixth or the seventh month, and it was considered desirable to save the life of the child at some risk to that of its mother. If, however, I were to sanction delay under these conditions I should state very clearly that I considered the risk to the mother to be increased by the waiting, and I should leave to the patient and her relations the responsibility of deciding in favour of postponing the operation.

"It has been recommended that at term surgical interference should be put off until after the child is dead, so that the placenta may die and the risks of hæmorrhage may be avoided. Sometimes

however, the placenta may be easily removed by operation without loss of blood, if, for instance, it is mainly attached to the broad ligament and omentum. Undoubtedly difficulties from hæmorrhage may be very great. Notwithstanding this, it seems to me that any advantage gained in making hæmorrhage less likely by waiting till the child is dead, will be fully counterbalanced by the extra risk of strong adhesions forming to the intestines in consequence of the presence of a dead fœtus and amnion amongst them. I have already pointed out that the living amnion and fœtus seem to cause little irritation.

"The advice to operate with all convenient expedition on every case of extra-uterine gestation in which the child is believed to be living may not meet with universal approval. But I have no hesitation in urging that to watch a living fœtus developing outside the uterus will in a very great majority of cases, if not in every case, expose the patient to greater risks than those of an operation."

The risks of delay are well illustrated in a case recorded by Doran,[7] in which operation was undertaken two months after the death of a fœtus at the eighth month.

REFERENCES.—[1]*Lancet*, April 8, 1899; [2]*Med. Rec.*, Nov. 5, 1899; [3]*New York Med. Jour.*, April 20, 1901; [4]*Bull. et Mém. de la Soc. de Chir. de Paris*, Nov. 14, 1899; [5]*Ibid.*, Nov. 21, 1899; [6]*Brit. Med. Jour.*, July 13, 1901; [7]*Ibid.*, June 23, 1900.

PROSTATE (Diseases of the). *E. Hurry Fenwick, F.R.C.S.*

Prostatic Hypertrophy.—The literature of the past year contains no real progress in the treatment of enlargement of the prostate. The swing of professional surgical opinion is leaving orchidectomy and vasectomy, and again approaching direct operative procedures on the prostate gland. The surgeon to whom credit for this change of opinion is undoubtedly due is Mr. Freyer. He has drawn marked attention to the value of suprapubic enucleation of adenomatous masses, and given prostates four excellent illustrations. Although this operation naturally followed upon the original Belfield-McGill operation, and has been practised ever since 1888, yet its severity only allows of its occasional performance, whilst the condition for which it is especially valuable—viz., *adenomatous prostates*—form only a limited group in the family of the senile enlarged prostate. Albarran strongly advocates the perineal enucleation operation we know of in this country by the name of Nicol's operation. The position then is as follows;—For large elastic prostates, the patient having sufficient *vis vitæ*, enucleation, either suprapubic or perineal, is

advised; as an off chance of relief in tough prostates, vasectomy; and as an alternative for those who permit it, orchidectomy. Bottini's operation is awaiting maturer consideration.

Bottini's Operation.—In continuation of a paper published in 1899 (see *Medical Annual*, 1901), Willy Meyer[1] reports twelve further cases of Bottini's operation for enlarged prostate, bringing his total number of cases up to twenty-four. In these the operation was done thirty times, for it was repeated in four instances, and done three times in one case.

The following results were obtained:—Nine cases cured; seven cases much improved; two cases improved; three cases died since operation, but not directly or indirectly from it; two cases died indirectly from the operation; two cases died from the operation.

Cured cases: In six of these cases the cure was proved to be lasting by a final examination made from three to twenty-five months after the operation. Two patients failed to appear for examination, although requested to do so. One cured case died of pernicious anæmia nine months after the operation. Up to the time of death he passed water more freely than he had ever done so long as he could remember.

Cases much improved: The result in these cases was lasting, as shown by examination made six months to two and a quarter years after operation.

Cases improved: The improvement had been maintained for twelve and nineteen months respectively in the two cases. One of these patients was at first completely relieved, but now shows a recurrence of a number of his former symptoms. The catheter has been dispensed with from the day of the operation.

Deaths since operation, but not due to it: One case had pyelonephritis of long standing. He recovered from the operation, and was discharged from the hospital. Some weeks later he developed serious symptoms of pyelonephritis, and finally died in another hospital. Another case had been operated upon by other surgeons for prostatic enlargement. Thus vasectomy, perineal prostatectomy, suprapubic cystotomy, castration, and Bottini's operation had been successively done, and he had a wide open suprapubic fistula. Bottini's operation was repeated, and he rapidly recovered. Eight to ten weeks later he died of an aggravation of the old-standing pyelonephritis. The other case, which died of pernicious anæmia, has already been included under the cures.

Deaths indirectly due to the operation: In one case the vesical spasms after the operation led the patient to insist on immediate

relief. A suprapubic cystotomy was performed, and the patient died a few minutes after the operation. In another, phlebitis of old varicose veins of the thigh followed a few days after the operation, and the patient died eight days later from pulmonary embolism.

Deaths from the operation: One was due to acute sepsis, and the other to suppuration in the cavum Retzii following a too deep anterior incision.

This series of cases includes all those operated on by Meyer after Bottini's method. The cases were not selected, but the material used as it came under observation. The author has abandoned the *anterior incision*, since the fatal result in one of his cases.

Freudenberg,[2] who has been mainly responsible for the popularity of the revised Bottini operation, since he devised instruments for its safe performance, and demonstrated by a large number of cases its efficiency, has published a paper embodying the results of a statistical study.[3] In all he has collected 753 cases of the operation, with forty-four deaths. Of these forty-four deaths only twelve could reasonably be attributed to the operation. The result was stated in 716 cases, and was as follows:—86·63 per cent. were improved or cured, and of these 61·3 per cent. were cured and 38·7 per cent. improved. There were 7·66 per cent. of failures.

Freudenberg's personal experience amounts to eighty-six operations on sixty-nine patients; seventy-eight times with the incisor and eight times with the cauterizer. Freudenberg's operative mortality is 5·8 per cent., rather higher than that of the collected statistics. This he attributes to the publication of selected favourable cases by various authors lowering the general mortality. In sixty-one patients operated upon on account of obstruction from enlarged prostate, thirty-one were cured (50·82 per cent.) and sixteen very greatly improved (26·23 per cent.).

His criterion of cure is as follows: The catheter is entirely discarded, there is no undue frequency of micturition or difficulty in the act, and the residual urine shall not be greater than 6 to 8 drachms. Where there is a marked improvement in general health, an increase in body weight, a diminished residuum, and only partial dependence upon the catheter, he considers the case as "improved."

Eight patients showed no improvement (13·1 per cent.), and a second operation was performed in three. There seems to be little tendency to recurrence after a thorough operation: the author has only seen one case in four years.

Vasectomy.—Mr. Reginald Harrison[4] gives some illustrations of obliteration of the seminal duct relative to hypertrophy of the

prostate and bladder atony. His cases fall into three groups, according to the result obtained.

In the first group the effects were good, sufficient and enduring. Here there was prostatic obstruction pure and simple, without any other structural complication. The bladder was in no sense secondarily implicated structurally, and was capable, on removal of the obstacle in front of it, of both holding and expelling its contents. In this class shrinkage of the enlarged prostate, however induced, speedily leads to restoration of the function of micturition in the fullest sense of the term.

In the second group the results were good, but restricted to certain conditions. Here structural changes had supervened upon prostatic obstruction, and catheter life had been more or less developed.

In the third group the results seem to have been inadequate or negative. In those cases there were structural changes in the bladder wall, and in some, signs of back pressure on the kidneys.

Mr. Harrison reminds us that the good done by the operation cannot always be measured by the use or non-use of the catheter by the patient. The bladder is already damaged, but the further progress of the obstructive disease may be arrested. The catheter is passed with greater ease and without hæmorrhage, as occurs in some cases, recurrence of stone in some cases of phosphatic calculus is avoided, and the kidney function improves, as shown by the increased density of the urine.

Pankratjew[5] has collected 270 cases of resection of both vasa deferentia in man for prostatic hypertrophy. 30 per cent resulted in complete cure, 33 per cent were improved, 25 per cent unaffected, and 11·5 per cent died. Intercurrent renal disease was the cause of death in nearly all the fatal cases.

Wood, of Philadelphia, has collected a large number of cases of castration and vasectomy for enlarged prostate.[6] He avoids the cases previously collected by White and Cabot. Of 159 cases of castration, thirteen died, a mortality of about 8 per cent. A few cases of mental disturbance occurred after the operation, and polyuria and ptyalism have been noted. The prostate decreased in size in 51·5 per cent of those that recovered (sixty-seven cases), and the function of micturition was restored or improved in 57 per cent (seventy-four cases.) Over 90 per cent. may be said to have been benefited.

Of 193 cases of vasectomy there was general improvement in 118 (67 ⅝ per cent). There were thirteen deaths (6·7 per cent). Some mental disturbance was observed in a few instances. In

this respect the author says the two operations are about on the same footing.

Keyes[7] believes that the clinical evidence as to the actual atrophy of the prostate after castration lacks, as yet, scientific confirmation, and has failed thus far to prove its title to the surgeon's credence.

Felix Legueu[8] favours the operation of subpubic prostatectomy. When the lateral lobes are involved, the perineal route offers a larger space for work, but the operation is no easier. He believes that total prostatectomy will be the operation of the future.

REFERENCES.—[1]*Med. Rec.*, May 12, 1900; [2]*Wien. klin. Rùnds.*, No. 46, 1900; [3]*Therap. Gaz.*, Jan. 15, 1901; [4]*Lancet*, July 14, 1900; [5]*Cent. f. Chir.*, No. 34, 1900; [6]*Ann. Surg.*, Sept., 1900; [7]*Med. Rec.*, July 21, 1900; [8]*New York Med. Jour.*, Oct. 27, 1900.

PRURITUS. *Norman Walker, M.D.*

Andrews[1] recommends **Heat,** especially in pruritus in the perineal region. The water in which the sponge is dipped should be as hot as can be borne without blistering.

Monell[2] recommends the **Electric Souffle,** the point of the electrode being passed slowly over the affected region from twelve to fifteen minutes.

Monroe[3] advises in the first instance a tonic, **Arsenic, Cod-liver Oil, Hypophosphites, Maltine,** or **Iron.** Alcohol should be forbidden. If the skin is dry and hot, **Tar Water** or a tar ointment will give relief. Spirits of **Camphor** and **Ichthyol** are also useful applications to ease the symptoms, while the physician searches for the disease which gives rise to them.

REFERENCES.—[1]*Clin. Rev.*, May, 1900; [2]*Med. Rec.*, Aug. 4, 1900; [3]*Cincin. Lancet Clin.*, Feb. 16, 1901.

PSORIASIS. *Norman Walker, M.D.*

Abraham discusses the treatment of this disease. He has very little faith in arsenic, regarding its vaunted specific efficacy as little short of a medical myth. Thyroid gland he has discarded, after an extensive trial. His favourite remedy is **Chrysarobin,** and he also uses **Creolin** and **Salicylic Acid.** For psoriasis of the scalp the most efficacious treatment in his experience is an ointment of 1 drachm of **Ammoniated Mercury** and 3½ drachms each of soft soap and vaseline.

Balzer and Monsseaux[2] treat the disease by baths of **Oil of Cade.** The medicament is prepared as follows; Black Soap, 3 ozs; Water, 6 ozs. These are mixed, and then 3 ozs. of oil of cade is added, and the mixture is poured into the bath. They allege that their

results are as good and as rapid as under any other method of treatment.

Shoemaker[3] prescribes the following ointment to relieve the itching of psoriasis :—

R	Salicylic Acid	ʒj	Calcium Sulphide	ʒss
	Resorcin	āā ʒss	Zinc Ointment	ʒj
	Carbolic Acid			

M.

References.—[1]*Lancet*, Sept. 22, 1900 : [2]*Jour. des Pract.*, May 26, 1900 ; [3]*Med. Bull.*, Sept., 1900.

PUERPERAL ECLAMPSIA.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Most authorities now look on this condition as one of auto-toxis, a poison of fœtal origin being included in this term : but the immediate source of the toxin or toxins—whether maternal or fœtal, or both—is not as yet a subject of agreement.

Pathology.—Hey Groves,[1] in a communication to the Obstetrical Society of London, advocating the use of saline transfusion, referred to the pathology of the condition. He believed the essential lesion to consist of minute capillary thrombi with hæmorrhagic infarctions surrounded by tissue necrosis. This lesion was shown to be of the same character in the brain, the liver, and the kidneys, and to occur also in the lungs, spleen, and other organs. The greatly increased coagulability of the blood was related to this lesion. The origin of the toxins was considered to be threefold : (1,) From the placenta ; (2,) From the fœtus ; (3,) From the alimentary canal. The pre-eclamptic stage of the disease was caused by the presence of the toxins in the blood. The actual convulsions and coma resulted when these toxins caused the coagulation of the blood and the multiple capillary thrombi. The author concluded by suggesting that the therapeutic action of the saline solution depended upon its hindering the formation of the capillary thrombi, and dissolving those just formed. He pointed out that it could not act primarily as a diuretic, because diuresis occurred after the convulsions had ceased. He also referred to cases in which gelatin injections had caused symptoms of anuria and uræmia, accompanied by multiple thrombosis, arguing the possibility of these conditions arising from a morbidly increased coagulability of the blood.

In the discussion on this paper Herman remarked that the theory put forward was that in eclampsia the coagulability of the blood was increased ; but the only evidence of this was that in some cases the medical attendant had been surprised at the small amount of

blood lost. Physiologists had apparatus for exactly measuring the rate of blood coagulation, and it would be more convincing if the coagulability of the blood in eclampsia had been measured by an instrument of precision. He did not attach importance to the morbid condition said to have been found in the brain. Were the miliary hæmorrhages described anything but ecchymoses such as were seen under the skin, the pleura, and elsewhere, and due to the tremendous venous congestion during the fit? Large cerebral hæmorrhage occurred so seldom, that it could not be due to any condition which was a regular and essential part of the disease. He thought that cerebral hæmorrhage was occasionally seen in eclampsia, because in a few cases granular kidney and the vascular degeneration associated with it were present, and in such cases the arterio-capillary changes predisposed to cerebral hæmorrhage. Pregnant women with previously diseased kidneys were more liable to eclampsia than those with healthy kidneys. Groves had described the chronic renal disease of pregnancy under the name of the "pre-eclamptic stage." Herman thought this term was hardly appropriate, seeing that not more than 1 in 5 of the cases suffered from eclampsia, and that in some cases eclampsia came on without any pre-existing renal disease. He thought the essential morbid condition in eclampsia was the acute degeneration of the cells in the great glands, the liver, and kidneys, and that the hæmorrhages were incidental, and a result of the fits.

As to the precise nature of the poison, Marx[2] points out that the various theoretical factors fall into three groups: (1,) The auto-infective group, represented by ptomaines, and derived from defective alimentary or renal excretion, or from abnormal re-absorption; (2,) The heterogenetic type, having a bacillary origin, with bacteria toxins; (3,) Products of faulty metabolism, such as anomalies of oxidation, a type of which is carbonic-acid poisoning. Marx leans to the view that the poison belongs to the last group, that it is in fact urea, or one of its congeners. Consequently he regards the estimation of albumin in the urine as of quite secondary importance, compared with the estimation of the urea. Marx has never, except once, seen a case in which constitutional symptoms arose or manifested themselves when the amount of urea excreted was normal; but toxic symptoms were always present with diminished urea secretion.

Treatment.—All writers on this subject very properly insist on the importance of prophylactic measures; and in this there is no difficulty so long as the practitioner is on the look-out, and is able

to follow the process of renal excretion in any doubtful case. The presence of albumin in the urine will always be a danger-signal, but the danger may be distant. On the other hand, diminution in the amount of urea excreted means that immediate action must be taken to avert a catastrophe which is very near. The true pre-eclamptic stage is not the stage of albuminuria, for in many of these cases eclampsia does not follow, whilst it may come on in the absence of albuminuria; the time when elimination is at fault, as indicated by deficiency of urea excretion, is the true pre-eclamptic stage. The peremptory indication is for a **Milk Diet, Saline Purgatives, Diuretics,** and **Vapour Baths**; in fact, elimination must be assisted, while the patient is kept absolutely at rest in bed.

If nevertheless the symptoms of toxæmia become more marked (an unlikely event if treatment has been carried out on the above lines), or if they supervene without sufficient warning to allow of such treatment, more radical measures are required; and here it is that we meet with a confusing array of methods of treatment, each supported by well-known names. Our effort must now be directed towards ascertaining what is the best treatment under certain specific conditions, for we may at once take it for granted that no one plan of treatment is adapted to every case.

Supposing, firstly, *that the patient is in labour*. Whether or not fits have started, our clear duty is to effect delivery as soon as possible, with the least possible disturbance. Whether or not **Chloroform** should be resorted to is a matter of divergence of opinion. Gaulard[3] thinks it tends to prevent eclamptic attacks, and Marx is of the same opinion; Lyle,[4] on the other hand, thinks that its action is too temporary, and that it is very depressing to the patient. Nevertheless, in the absence of fits, and in order to accelerate delivery, we believe that the prevailing opinion is that chloroform is of great value.

Supposing, secondly, *that the patient is not in labour*. We shall naturally first turn our attention to drugs. A pulse of high tension calls for diuretics and drugs of the vaso-dilator class, such as **Nitroglycerin** and **Nitrate of Sodium**; whilst if cardiac tonics are also required, **Spartein** and the **Caffeine Salts** will be found useful. In cases of low tension, Marx highly recommends **Strychnine**. **Veratrum Viride** has been much used; but the tendency of the great majority of writers is to condemn it. **Digitalis** is praised by Stroganoff, but Marx considers it positively contra-indicated, on the ground that, possibly because of its digitoxin, it is a decided and direct renal irritant, and he holds that it has no place in the treat-

ment of a condition in which there is present at least a functional irregularity of the kidney.

When convulsions have come on there are three objects which must be clearly kept in view: (1,) The control of the convulsions; (2,) The purifying of the blood; (3,) The emptying of the uterus.

(1,) The control of the convulsions is considered first, because although the purifying of the blood would *ipso facto* lead to the cessation of the convulsions, it is nearly always necessary to control these in order to gain time for the second indication. Four drugs stand out conspicuously, *viz.*, **Veratrum Viride, Chloroform, Chloral,** and **Morphia.** Ballantyne[5] records a case which was treated by veratrum, the injection of saline solution, and the induction of abortion; but veratrum is not without risks, and as above stated, there is a growing tendency to its disuse. Killebrew[6] advocates inhalation of chloroform, as do other writers; on the other hand, Fitzgerald[7] relates a case where it failed to control the convulsions. Chloral has a place, no doubt, in the less acute cases; but it requires time to act. Morphia is highly spoken of by many writers; Fitzgerald records two cases in which it was apparently of great value. Lyle sums up in its favour as follows: Chloroform is undoubtedly bad, as its action is very temporary, and very depressing to the patient; the action of chloral and veratrum viride is more lasting, but they are both cardiac depressants; while morphine, judiciously given, is quite free from any disadvantage, and has the following advantages:—

(*a*,) It controls the convulsions by allaying the irritability of the cerebro spinal system.

(*b*,) It prevents excess of waste products being thrown into the blood.

(*c*,) It does not weaken the patient.

(*d*,) It does not injure the child.

(*e*,) It has no effect on the kidney.

(*f*,) When the patient is under its influence labour often commences, and quickly terminates without causing more convulsions.

Marx speaks well of full doses of **Codeine,** two to four grains being given per rectum.

(2,) The purifying of the blood. Once the convulsions are somewhat under control, immediate steps should be taken to assist in the elimination of the poison, and there is no doubt that the most promising plan is the injection of **Saline Solution** into a vein or into the cellular tissue, *e.g.*, under the breast or scapula. Many authors testify to the value of this procedure, such as Jardine and Kerr (see ref. No. 1), Ballantyne, Lyle, Stroganoff, Marx, Killebrew,

Payne,[8] and others. Marx carries out this indication by means of hot colonic irrigations of salt solution. Killebrew combines it with **Venesection**, allowing the solution to run in at the proximal end of an opened vein at the elbow, while blood (12 to 24 oz.) is allowed to flow from the distal end. In cases of high tension there can be no doubt of the value of venesection, both for abstracting and diluting the poison and also for relieving the heart. Marx thinks that when there is an indication for venesection, there is also an indication for the prompt emptying of the uterus ; and he says that if, after the uterus is emptied, there is an indication for the abstraction of blood, let it be from that organ ; take no measure to insure firm contraction of that viscus, but allow a free and copious hæmorrhage to take place until the pulse becomes soft, feeble and slow. There is no doubt something to be said for this argument. It seems to us that the beneficial effect of delivery may be in some cases in no small measure due to the accompanying hæmorrhage. If the fits come on after delivery, with high tension pulse, good will probably follow venesection or the application of a number of leeches, combined with transfusion.

(3,) The emptying of the uterus. The consensus of opinion is strongly in favour of this being done as soon as possible, especially in severe cases. But it should also be done calmly, and with as little disturbance to the patient as possible.

A recent very suggestive paper by Nicholson[9] suggests that the toxæmia of pregnancy may, in some cases, be due to inadequate function of the thyroid gland. According to him, Lange noted twenty-five pregnancies in which the usual hypertrophy of the thyroid did not appear ; in twenty of these there was albuminuria. Large doses of **Thyroidin** were given to pregnant women in whom the physiological enlargement of the gland had occurred, and a marked diminution followed. Thyroidin had a marked diuretic effect. It did not greatly diminish the albuminuria. He consequently recommended the treatment of eclampsia and the pre-eclamptic state by **Thyroid Extract.** The patient might be treated in the pre-albuminuric, in the pre-eclamptic stage, and even after the convulsions had commenced, with a fair prospect of success. If patients could be induced to seek advice during their pregnancy, the slighter premonitory symptoms might be recognised, and practitioners would be forewarned of danger. A slow and high-tension pulse at the end of gestation should lead to an inquiry after other symptoms : diminished urine, small pathological enlargements of the thyroid, albuminuria, diminished quantity of urea. In the

early stages, with less urine, unduly high-tension pulse, before albuminuria, thyroid extract might be given in 5-grain doses night and morning, and after a few days thrice daily. Proteid foods should be entirely forbidden at first, but with increasing secretion of urine, and improvement of other symptoms, they might be cautiously resumed. **Potassium Iodide** had been regarded as a specific for puerperal albuminuria. Was it possible to re-establish thyroid function by this drug? Potassium iodide infusions, instead of ordinary saline infusions, had been advocated for eclampsia. Thyroidin supplied iodine. When signs of eclampsia had appeared, and a fit seemed imminent, the hypodermic injection of 10 or 15 minims of liquor thyroidii, repeated every hour or two, should be resorted to. Or, better still, the fresh juice of a sheep's thyroid, 10 minims with an equal quantity of distilled water. For the immediate treatment of the convulsion, **Morphine** was the remedy, ½ grain for the first injection. **Sodium Salicylate** might be given afterwards as Haig suggested. **Saline Injections** had been highly extolled by Jardine and others. Probably these relieved the arterial spasm, and then diuresis followed. By the combined use of **Thyroidin** and **Morphine** it was possible: (1,) To relax arterial spasm fully and permanently; (2,) To temporarily arrest general metabolism, and in this way tide the thyroid gland over a period during which it might recover its functions; (3,) To supply artificial iodothyrin to counteract certain symptoms due to its deficiency in the blood and tissues; (4,) To supply iodine for the elaboration of iodothyrin by the thyroid gland itself, and thus hasten its return to normal activity.

REFERENCES.—[1]*Obst. Trans. Lond.*, 1900; [2]*Med. Rec.*, April 20, 1901; [3]*Presse Méd.*, Jan. 5, 1901; [4]*Brit. Med. Jour.*, Jan. 19, 1901; [5]*Scottish Med. and Surg. Jour.*, July, 1900; [6]*Med. News*, Nov. 3, 1900; [7]*Brit. Med. Jour.*, Nov. 24, 1900; [8]*Austral. Med. Gaz.*, June 20, 1900; [9]*Brit. Med. Jour.*, June 22, 1901.

PURPURA. *Norman Walker, M.D.*

Burt[1] details a case of the hæmorrhagic variety. Numerous ecchymoses were present on the skin and mucous membranes. There were profuse hæmorrhages from the mucous surfaces, followed by profound anæmia. The patient, who was a boy, aged eleven, died on the tenth day, all remedies having proved useless. He suggests that bacteria very likely played an important part in the production of the disease.

Tuley[2] says that purpura hæmorrhagica is a modified form of scurvy, due perhaps to a one-article diet, or to an ill-directed diet.

[Purpura is more and more evidently a disease of the blood. Its

occurrence in known blood diseases, such as leucocythæmia, where the blood is known to be diseased, suggests that that may also be the case in the so-called idiopathic forms.—N.W.]

REFERENCES.—[1]*Brit. Med. Jour.*, Nov. 10, 1900; [2]*New York Med. Jour.*, Nov. 24, 1900.

RECTUM. (See also "Anus"). *Herbert W. Allingham, F.R.C.S.*

Paralysis.—A. Hesse[1] states that too little attention is paid in medical literature to the conditions leading to incontinence of fæces. He reports the case of a boy, aged six years, who had had rickets but never any form of paralysis. The child ate enormous quantities of farinaceous and meat food, and suffered from constant diarrhœa; the abdomen was enlarged, and the sphincter ani without tone. The fæces contained free starch granules and muscle fibres. Hesse ordered a constipating diet, and prescribed **Tannalbin.** The result was satisfactory. Nocturnal incontinence, however, which was also present, persisted.

Cancer of Rectum.—Quénu[2] gives his views on the abdomino-perineal operation for cancer of the rectum. He would employ this operation in all cases except those where the growth is low enough to be removed by a purely perineal operation. He recommends that a preliminary sigmoidostomy be carried out some days beforehand. The belly is opened in the middle line, and both internal iliac arteries are ligatured. The already existing sigmoid anus is liberated, and the bowel completely cut across with the thermo-cautery. The cut ends are cleansed and enveloped with iodoform gauze. The upper end is then brought out in the left iliac region and constitutes the permanent anus. The lower end is freed. It is then packed with gauze at the lower part of the pelvis. The abdominal wound is closed. The patient is then placed in the lithotomy position, and the final steps of the operation are carried out from the perineum. After the anal canal has been plugged, semilunar incisions are made on either side of the anus, the levatores ani are divided, the anterior wall of the rectum is carefully liberated, the pouch of Douglas is opened, the remaining connections are divided, and the diseased segment of the bowel is brought out of the wound and removed.

W. Ziermann[3] points out the advantage which the vaginal route offers over the sacral in resection of the rectum. He claims that a clearer view is obtained of the parts to be dealt with, and that closure of the wound is simple. The operation is done in the lithotomy position. Four illustrative cases are given.

Murphy[4] gives five cases of partial removal of the rectum through

incision in the posterior vaginal wall. He claims as advantages that the sacrum and posterior bony wall of the pelvis are undisturbed, and that there is easy access for inspection of and operation upon the implicated parts.

Prolapse: Abdominal Colopaxy.—J. B. Murphy,[5] of Chicago, describes the operation that he performs for severe procidentia recti. The sigmoid and colon were sutured to the psoas and iliacus muscles in the pelvis and then to the lumbar and ventral muscles as far as the last rib by two rows of interrupted sutures. The peritoneal flap was drawn over the sigmoid and sutured to the meso-sigmoids.

REFERENCES.—[1]*Berl. klin. Woch.*, June 3, 1901; [2]*Edin. Med. Jour.*, Nov., 1898; [3]*Ann. Surg.*, April, 1899; [4]*Phil. Med Jour.*, Feb. 23, 1901; [5]*Clin. Rev.*, June, 1901.

REFRACTION (Errors of). (See "Vision.")

RETINA (Affections of). *E. H. Holthouse, M.B., F.R.C.S.*

Arterial Thrombosis.—Galezowski[1] has noticed for many years that patients suffering from loss of vision in one eye, and showing the usual signs of embolism of the central artery, have yet presented no sign of cardiac lesion to which such embolism could be attributed. No doubt could be felt that there was endarteritis near the point of passage of the arteria centralis through the sclera. In some cases this was enough to ensure arterial obliteration, in others more or less marked disturbances in the circulation occurred, with signs of peri-arteritis attributable to a gouty or arthritic diathesis. In the latter there is usually to be seen exudation along the vessels, especially at the papilla, and the ophthalmoscopic appearances may be those of sudden intense papillitis. Galezowski thinks that in such cases there is an obliteration of the central vein of an arthritic nature. All the vessels of the retina may be diseased. There may be endarteritis, primary or resulting from an embolism, peri-arteritis, and phlebitis. Careful observation is necessary to distinguish between them. Endarteritis progresses slowly without marked symptoms until a thrombus suddenly occurs, when sudden failure is brought about, which may be mistaken for that due to embolism. Peri-arteritis, however, is a frequent complication of albuminuria, and is accompanied by a slowly developing loss of vision which in many instances is gradually restored. After development of the thrombus the ophthalmoscopic appearances closely resemble those of embolism. Many causes give rise to the endarteritis, not only rheumatism, gout, and syphilis, but alcoholism, and diabetes. Besides the treatment incidental to the general disease, Galezowski holds that much good

may often be done by alternative application of heat and cold to the eye.

Embolism.—Though sight is almost always lost when the central artery of the retina is blocked by an embolus, occasional cases of partial recovery have been recorded, and Edgar S. Mourson[2] (New York) has made an addition to the list. The case was that of a gentleman of fifty-nine, whose left eye presented the usual signs of embolism, vision being reduced to the counting of fingers at 2 feet "in supero-temporal periphery." **Strychnine,** gr. $\frac{1}{60}$, three times a day was prescribed, and afterwards **Bichloride of Mercury** gr. $\frac{1}{32}$ twice a day in addition. Improvement was noticed three days later, and was continued until finally, more than two years after the attack, vision was nearly normal in the upper half of the field of the affected eye, the entire upper half of the field being restored down to within ten degrees of the macula. There was no perception of light at the macula nor in the lower half of the field. The patient lived for nearly a year after this without further loss of vision. Although some of the vessels of the fundus appeared to be of cilio-retinal nature, the initial reduction of vision in the area supplied by them, and the absence of total atrophy of the nerve many months after the lodgment of the embolus, proved them to be branches of the retinal artery. The partial restoration of vision, therefore, must probably be attributed to the fact of the embolus being fixed so far forward as not to obstruct completely the passage of the blood to the retina. Attempts to bring the embolus forward by lowering the intra-ocular tension through a paracentesis of the cornea, or by massage of the optic nerve, have unfortunately been almost always unsuccessful.

Ocular Symptoms in Posterior Spinal Sclerosis.—A valuable clinical study on this subject, based upon a series of careful examinations carried on for more than five years, has been made by Charles A. Oliver[3] (Philadelphia). Recognizing the great primary divisions of the disease into a pre-ataxic and an ataxic, or, as he prefers to call them, an initiative and a degenerative stage, he separates the subject matter of his study, for the sake of convenience, into two great classes, the "optic type" and the "spinal" type. The former is by far the more important for the ophthalmologist. The gross "optic type," appearing in about 10 to 15 per cent of the total number of cases, is at first shown by fair, if not normal, vision. This is followed, without the appearance of any gross general symptoms or even papillary changes in the majority of cases, by a whole series of visual paræsthesias and somewhat irregularly contracted fields of vision for white, with markedly diminished ones for colour. There are

frequently slightly marked spastic movements of the extra-ocular muscles, combined with both normal and even exaggerated deep reflexes, as particularly seen in the patellar tendon groupings. In this stage, in the majority of cases, the edges of the optic disc will appear slightly hazy; the retinal arteries, especially in the syphilitic types of the disease, will show peri-vascular change, the retinal veins will be more or less tortuous, and slight disturbances in the choroid will be manifest. Sooner or later these signs will be followed by symptoms of degeneration, each case being complicated by an intervening stage of apparent improvement in both the objective and subjective conditions, lasting for varying periods, and dependent usually upon the severity of the disease, hygiene, and treatment. The disease, however, not being kept in abeyance, atrophic processes in the optic nerves gradually and certainly take place. The optic disc becomes intensely greenish-gray in tint, especially in its temporal half, its vascularity lessens, the borders again become visible, its surface sinks smoothly and evenly, sometimes exposing the cribriform plate, while the retinal and choroidal tissues about its edges appear thinned and degenerative. Where there has been no peri-vascular change, the blood stream, particularly the arterial, becomes narrowed and offers but slight contrast to that of the contiguous structures. Vision for both form and colour, after a varying degree of improvement, gradually decreases until all perception of light is lost. The visual fields also, after enlarging in a few cases, again contract in an irregular manner, until absolute blindness is reached.

During this pre-ataxic or "initiative" stage some of the well-known papillary, ciliary, and extra-ocular muscle signs are manifested in at least 30 to 50 per cent of the cases. Failure of iridic reaction to light (80 per cent); commencing inability of continuance of forced lateral monocular and binocular fixation, with tremulous palpebral movement; paretic diplopias of various kinds, are among the prominent motor signs present.

Later, after variable periods, but often quite early in the disease, without the appearance of many of the ordinary gross general expressions of the condition, total blindness in both eyes occurs.

The other "spinal" form of the disease, with its multiform symptoms, does not so often come before the ophthalmologist, because, in the great majority of cases, in spite of coarse objective appearances in the optic disc, good vision is retained for long periods of time. Strongly contracted pupils, with finally complete loss of reaction to light, are common. Early ataxias connected with the third, fourth, fifth, sixth, and seventh pairs of nerves are to be observed.

The fundus changes, though marked, are not extreme, and there is an absence of all gross inflammatory signs in the ocular structures even in association with the greatest general disturbances. But these objective and subjective signs gradually make themselves felt until, at last, nothing but small peripheral areas of light-perception in the lower temporal fields are left, and the motor apparatus becomes fixed and nearly useless.

REFERENCES.—[1]*Jour. Eye, Ear, and Throat Dis.*, Dec., 1900; *Treatment*, April, 1901; [2]*Med. Rec.*, April 13, 1901; [3]*Amer. Ophth. Soc.*, May 3, 1900; *Amer. Jour. Med. Sci.*, July, 1900.

RHEUMATISM (Acute). *R. Hutchison, M.D.*

ETIOLOGY.—During the past year important evidence has been forthcoming in favour of the microbic theory of this disease. Curves of statistics and mortality; occasional epidemic occurrence; transmission of the disease from mother to child in utero; its affiliation to the joint inflammations which at times complicate gonorrhœa, pyæmia, pneumonia, and septicæmia, are all confirmatory of this view.

A. S. Wohlmann[1] describes as follows the state of our knowledge as to the bacteriology of acute rheumatism at the end of 1899.

In 1887, Dr. Mantle found cocci, diplococci, and a short bacillus in the joint fluid and in the blood of patients suffering from rheumatic fever. In 1888, Guttmann, Birch-Hirschfeld, Bouchard and Charrin, Triboulet, Sahli, and Sacaze, found staph. albus, and sometimes streptococci in acute rheumatism. In 1891, Achalme first found his bacillus. In 1894 several observers described organisms occurring in joint fluids and blood of patients suffering from acute and "chronic" rheumatism. In 1895 Newsholme demonstrated the epidemicity of the disease, and concluded that its cause was probably a saprophyte, spending part of its existence in the soil, and part as a parasite in man. In the same year Leyden isolated a "delicate diplococcus." This is of interest in connection with the results obtained by Drs. Bannatyne, Blaxall, and myself in pernicious arthritis. In 1897 there were many workers at this subject, and their results are more and more in agreement. Achalme confirmed his previous observation of a large bacillus resembling anthrax. Thiroloix confirmed this, and injecting a guinea-pig caused endocarditis. Triboulet and Coyon found Achalme's bacillus alone in two cases of severe acute rheumatism, but in milder cases it was generally associated with a diplococcus.

As of all the observations, that of Achalme seems to have met with most support, a short summary of his results may not be out

of place. Examining the heart blood and the cerebro-spinal fluid of two cases of undoubted acute rheumatism as soon as possible after death, he obtained in each instance in pure culture and in enormous numbers, a bacillus similar in appearance to that of anthrax, and identical with that which he had obtained six years before. In six living cases he examined the blood, and obtained in four cases pure culture of this same bacillus, and in two the bacillus associated with micrococci. The bacillus stained readily with aniline dyes, or by Weigert's or Gram's methods, but feebly alkaline methylated blue was the best and most selective stain. For cultures horse bouillon with the addition of a little glycerin was the best. In regard to growth, while the breadth remained the same, the length varied exceedingly with the medium employed, being short in those very rich in hydrocarbons, such as milk, longer in serum, and almost filamentous in human urine. It was absolutely anaerobic, and flourished at temperatures 30° to 38° C. Sporulation was best observed in the amniotic fluid of a rabbit killed by inoculation. On the third or fourth day a spore highly refractile and difficult to stain appeared at the end of the bacillus, which assumed a nail form, and then, gradually disintegrating, set free the spore. Injection in guinea-pigs caused very great local œdema, formation of serous pouches, and death of the animal in from twenty to thirty-six hours.

He made several observations, very suggestive from a clinical point of view. Growth in sterilised urine threw down a copious precipitate of urates, while growth took place more readily in the urine of "arthritics" than of other people. Again, sodium salicylate in doses of two minims of a one per cent solution stopped all growth in a culture, a smaller dose than is required for most pathological microbes. He noticed, also, the marked sour smell given off by the cultures, due to the formation of lactic, acetic, butyric, and propionic acids. In experimental inoculations he found that however pure the culture injected, one often found it in the serous fluids associated with cocci, especially streptococci, and he once found the latter in the blood of a rheumatic patient. In regard to this, he remarks: "It seems as if the microbe, in pure culture at first, opens the door to the microbes of secondary infections, which may persist alone at the decline of the disease, and this would explain the numerous cases in which they have appeared to be pathogenic agents of rheumatism." This statement is of especial interest in view of the fact that a large proportion of the cases of pernicious arthritis have previously suffered from acute rheumatism, and that gonorrhœal rheumatism is especially prone to occur in rheumatic subjects.

Our knowledge has recently been extended by the researches of F. J. Poynton and Alexander Paine,[2] who have isolated from cases of acute rheumatism a diplococcus, which they believe to be at least one of the chief causes of the disease. There can, they think, be but little doubt that these diplococci are identical with those discovered by Triboulet in 1897, and by Wassermann in 1899. Triboulet isolated them from the blood in acute rheumatism and grew them anaerobically. He also produced in one instance valvular lesion in a rabbit, but did not produce poly-arthritis. In spite of this absence of joint lesions, he thought that these diplococci were the cause of rheumatism. Wassermann originally isolated them after death from a case of rheumatism, and produced poly-arthritis and teno-synovitis in a series of rabbits. He grew them on a strongly alkaline medium aerobically, but did not apparently obtain any valvular lesions. In addition to the isolated lesion obtained by these observers, the entire picture of rheumatic fever resulted. They have succeeded with acid, but failed with strongly alkaline media.

Bosanquet[3] has published some statistics of cases of rheumatic fever admitted to Charing Cross Hospital in the course of eight years (1890-97 inclusive), which throw some further light on the etiology of the disease. The total number of cases was 450. Females showed a slightly greater liability to be attacked than males. Over 72 per cent of the total number occurred between the ages of ten and thirty years. Taking first attacks only, no less than 50 per cent fell between the ages of eleven and twenty years. The earliest recorded instance of a first attack was a boy who was reported to have had rheumatism at the age of three weeks. Other early cases were those of a girl aged two years, a boy aged three years (actually observed in hospital), and a girl and boy each aged four years. The latest occurrences said to represent first attacks were at fifty-three and fifty-seven years, both in them. Only one first attack occurred in a woman over forty years of age. A family history of rheumatism was obtained in 22 per cent of the cases, but the author points out that such figures must be received with caution. With regard to the influence of employment, the only prominent fact is the large number of domestic servants who are affected; in the present series 23 per cent of the cases belonged to this class. The author suggests that the special liability of this class may be associated with their tendency to suffer from anæmia, and so to present a low resistance to the microbe of rheumatism. No special liability was found in those exposed to vicissitudes of weather. Two periods of maximum

incidence in the year were found, corresponding to the months of May and November, but the writer is of opinion that the seasonal curve of rheumatism is probably not very well defined.

As regards the joints chiefly affected, it is interesting to note that the knee and ankle were nearly twice as often involved as any other joints. Endocarditis, either old or recent, was found in 28 per cent of the males and 33 per cent of the females. Ulcerative endocarditis occurred in three patients, pericarditis in twenty-eight, pneumonia in fourteen, and chorea in thirteen, of which eleven were females. There were only two cases of hyperpyrexia.

DIAGNOSIS.—Brockbank[4] calls attention to the importance of "growing pains" as a sign of rheumatism in children, and cites five cases showing their association with the disease. He points out that such pains should at once excite the suspicion of the physician, and should direct his attention to the heart. Early endocarditis may thus be detected and checked in time. Still[5] also points out the significance of "growing pains," and emphasises the subsidiary part which articular phenomena often play in rheumatism as it affects children. Chorea also must be regarded as a sign of rheumatism, for out of 226 cases of that disease, 55·7 per cent showed positive rheumatic signs. Monarticular rheumatism is not uncommon in children, the hip being frequently affected. Such cases are apt to be mistaken for tubercular disease, or even, owing to the very indefinite localisation of pain by children, for perityphlitis, intussusception, etc. Stiffneck is another of the more trivial rheumatic manifestations in children. Still dwells on the frequency of cardiac rheumatism in childhood, and points out that marked wasting often accompanies it, and that this may indeed be the first thing which attracts the mother's attention. Other minor symptoms of rheumatism which are apt to be overlooked in children are epigastric pain (probably of gastric origin), headache, and minor neuroses, such as night-terrors, somnambulism, and habit-spasms.

Theodore Fisher[6] calls attention to the frequency and seriousness of rheumatic disease of the cardiac muscle, an affection which is very apt to be overlooked. All text-books speak of rheumatism as one of the causes of myocarditis, but the simple statement usually stands alone without comment. Clinically the possibility of lesions of the cardiac muscle following rheumatism is rarely thought of, and this is not to be wondered at, since, apart from associated valvular disease or adhesion of the pericardium, their presence is rare. Small fibroid patches are frequently seen scattered through the heart muscle in fatal cases of mitral stenosis, and it seems probable that a careful

study of the heart muscle in cases of mitral stenosis would explain the strange variability in the length of life they present. It is reasonable to consider that the fibrous tissue indicates the former presence of myocarditis set up by an attack of rheumatism. In support of such a view is the fact that occasionally acute myocarditis may supervene in a case of old valvular disease. It does not, however, require this visual evidence of disease of the heart muscle in cases of pericarditis to show us that there is poisoning of the cardiac walls. The rapid fatality of many cases is the best evidence of the poisoning. It cannot be considered possible that mere inflammation of the serous covering of the heart can arrest its action, for cases occur in which the pericarditis is so limited that such an explanation cannot be held to be satisfactory. In rarer cases, where death occurs from cardiac failure shortly after an attack of rheumatism, without pericarditis or serious valvular lesion being present, the direct action of toxins upon the cardiac muscle is still more strongly suggested.

TREATMENT.—Stengel[7] has found the German plan of giving large doses of the **Salicylates** for a short time, even if they produce toxic symptoms, more satisfactory than the prolonged administration of smaller quantities. If salicylic acid is likely to prove useful, it will do so in a comparatively short time, and the administration of a dose of 10 grains of the sodium salt three times daily does not suffice. When this plan has been used the drug has relieved pain scarcely at all, and has had no appreciable effect on the course of the disease. From 100 to 150 grains should be given in twenty-four hours, for two or three days, if symptoms of salicylism have not appeared; after that period the dose may be reduced one-half, and after one week's treatment the drug may often be discontinued. Persistent use of the remedy undoubtedly causes depression and other complications. The same general principles apply to the internal use of **Oil of Gaultheria, Salicin, Ammonium, Strontium Salicylate,** etc. The simultaneous or separate use of **Salicylate of Methyl,** applied to the skin in the form of a 10 or 20 per cent ointment, and covered with lint and oiled silk, is extremely satisfactory. Stengel has repeatedly compared the pain-allaying power of such local treatment with simultaneous applications of lead-water and laudanum, Fuller's lotion, and the like. Invariably the ointment has given the greater relief, and the systemic action of the drug was undoubtedly exercised, as abundance of salicyluric acid in the urine indicated the absorption of the drug. The relief of pain secured by the internal and external use of salicylates is beneficial in several ways, the chief of which is that such freedom from pain causes rest

of the diseased parts by relaxing muscular spasm, and at the same time improves the general condition of the patient. Some rest may, however, be obtained in another and better way, *viz.*, by the use of splints or **Plaster Casts.** For several years past Stengel has treated cases of acute rheumatism in this way. The plaster cast almost invariably relieves pain by reducing the muscular spasm and securing immobility, and its application is generally followed by rapid subsidence of the local signs of inflammation. The process of applying the cast has never been so painful to the patient that it had to be abandoned, and there has never been any increase of swelling after its application; on the contrary, it has often happened that a new cast was needed in two or three days on account of the reduction in the size of the joint. In very acute inflammatory cases Stengel has in the beginning covered the joint with lint on which salicylate of methyl ointment was spread, and has then fixed the part with a light cast, removing this in twenty-four or forty-eight hours. The ointment may cause irritation if it is allowed to remain too long in close apposition with the skin. In a few instances of rather subacute character it has proved useful to cut the cast so that daily dressings might be applied to the joint. In none of his cases has it been necessary to continue fixation so long that there has been any danger of ankylosis. As soon as the inflammation has measurably subsided it is advisable to discontinue the cast, but occasionally he has allowed it to remain for considerable periods, removing it from time to time to examine the joint or practice gentle manipulations.

Dr. Cosma, at the International Congress at Paris, recommended the treatment of acute rheumatism with large doses of **Salicylate of Methyl.** He begins with 15 to 30 grains daily, and goes up to 120 or 150 grains. The formula which he uses is as follows:—

℞ Salicylate of Methyl grs. 120
Mucilage grs. 2,250
Rum
Syrup
each grs. 375
M.

This quantity to be taken in 48 hours.

The drug may replace salicylate of sodium where the latter is not tolerated.

Many writers recommend the local use of salicylic preparations in acute articular rheumatism. The following are some of the prescriptions employed for this purpose. The first is ascribed to Bourget:—

℞ Salicylic Acid
Lanolin
Oil of Turpentine
each parts 10
Lard parts 80

The following is very similar. The skin is first cleansed with soap and water. Friction should last for five minutes. Wrap the limb in cotton, and repeat the treatment daily :—

R	Acid. Salicyl.	5j	Lanolini		5viij
	Ol. Terebinth.	5j			

The external application of iodoform in the form of a salve has been recommended, in the following formula :—

R	Sodium Salicylate	grms. 30	Vaselin	grms.	100
	Iodoform	grms. 10	Extract of Hyoscyamus	grms.	5

Treatment by Aspiration.—Zagato[8] reports the case of a young man suffering from acute rheumatism in the right knee and foot. The usual salicylate treatment combined with morphine injections barely relieved the severe pain ; so on the tenth day, the right knee being exceedingly swollen, instead of giving a hypodermic of morphine, he plunged the empty needle into the knee-joint, and in successive aspirations withdrew about 60 c.cm. of clear, odourless, olive-oil coloured synovial fluid. Before finally withdrawing the needle a syringeful of 2 per cent carbolic was injected. Pain ceased at once, and in three or four days the patient could move the knee freely, and without the least pain. A few days later the left knee became swollen and painful, the same treatment was repeated (about 50 c.cm. being withdrawn), and with similar good results. The right ankle and elbow were also slightly affected. It appeared that the severe pain in the knees was due to the extreme distension. No bad results followed.

REFERENCES.—[1]*Brit. Med. Jour.*, Nov. 11, 1899 ; [2]*Lancet*, Sept. 29, 1900 ; [3]*Lancet*, June 2, 1900 ; [4]*Brit. Med. Jour.*, April 28, 1900 ; [5]*Pract.*, Jan., 1901 ; [6]*Brit. Med. Chir. Jour.*, March, 1900 ; [7]*Med. News*, Dec. 22, 1900 ; [8]*Gaz. deg. Osped.*, Feb. 10, 1901.

RHEUMATISM (Gonorrhœal). *R. Hutchison, M.D.*

VARIETIES.—Lorimer[1] comes to the following conclusions regarding the varieties of gonorrhœal affections of joints : (1,) That the different descriptions of gonorrhœal arthritis depend on the fact that a uniform type of ordinary rheumatism has not been taken as a standard of comparison and contrast, and, therefore, many of the alleged differences are not essential distinctions, but are simply dependent on the degree of pyrexia ; (2,) That, excluding cases of ordinary acute rheumatism occurring during gonorrhœa, there are three distinct forms of gonorrhœal arthritis : (*a*,) The rheumatic form, in which the disease is at first identical with acute rheumatism, but as it proceeds the pyrexia becomes subacute, the migratory arthritis ceases and becomes fixed in one or two joints, where it runs

a tedious and protracted course. It is in this form that cardiac complications may appear, and that the analogies with ordinary rheumatism are more apparent. (*b*,) The subacute type, or true gonorrhœal arthritis, constitutes the largest proportion of cases. Cardiac complications are seldom present; there is absence of acid perspiration, a stationary type of arthritis, a liability to chronic articular changes, sometimes suppuration, and marked muscular atrophy. (*c*,) The chronic asthenic type, frequently mono-articular in scrofulous subjects, with hydrarthrosis and frequently effusion of sero-purulent fluid. (3,) That scarlatinal rheumatism and gonorrhœal rheumatism have certain distinctions in common, such as rarity of cardiac complications and liability to suppuration; but, on the other hand, the fugitive character of the former contrasts with the persistent character of the latter. (4,) That in regard to chronic articular changes, gonorrhœal arthritis occupies an intermediate place between ordinary rheumatism and arthritis deformans; for, on the one hand, though the joints do not quickly return to their natural condition, they hardly ever proceed to further destructive changes.

Bennecke has written a monograph[2] on the various forms of joint disease associated with gonorrhœa. The classification adopted is that suggested by König, and is pathological rather than clinical, Four varieties are recognised: (1,) Hydrops; (2,) The sero-fibrinous form; (3,) Empyema; (4,) Phlegmonous inflammation. The phlegmonous form is by far the most frequent, then hydrops. Fifty-six cases were observed—eighteen men, thirty-eight women. The knee was affected 31 times; the hip 8; the ankle 9; the foot 6; the shoulder 4; the elbow 10; the wrist 6; the fingers 4. No other joints were found implicated. In only one patient had the gonorrhœal discharge ceased when symptoms appeared. In forty of the cases the onset was sudden, and the early progress rapid. The effusion in the joint was examined from twenty-seven patients. Gonococci were found in eight. The inference is that the joint affection is probably the result of mixed infection. The treatment adopted in most cases was perfect rest, and the liberal application of **Tincture of Iodine** to the affected joint until vesication was produced. In some cases an intra-articular **Injection** of 8 c.c. of a 5 per cent solution of **Carbolic Acid** was used. All the cases showed a marked tendency to chronicity, and to the formation of adhesions.

König[3] points out that involvement of the hip joint is by no means so rare an occurrence in gonorrhœa as is commonly supposed. He reports twenty cases of such a condition, most of them in women

He notes that the disease is most apt to develop during the acute stages of a gonorrhœa, and that it is favoured in its development by pregnancy and the puerperium. The affection is often bilateral, and other joints may be involved. When it develops during a late stage of gonorrhœa it is often associated with vertebral involvement, resulting in ankylosis. The onset may be insidious or violent. In the former case there is a moderate pain and restriction of motion ; in the latter the pain amounts to positive anguish, the limb is completely fixed, and there may be often pronounced swelling. 25 per cent of König's cases recovered without disability. This was slight in about half the remaining cases, and was extremely pronounced in the remainder. There was shortening, stiffness, and often a faulty position.

It would seem wise to treat this affection in its early stages by absolute fixation, such as, for instance, could be obtained by the application of a plaster-of-Paris bandage. At the same time careful attention should be devoted to the curing of the gonorrhœa. Where pain is unbearable and the swelling is pronounced, it would be justifiable to treat the joint by tapping and flushing.

TREATMENT.—Mackenzie Forbes[4] considers that the rational treatment of urethral rheumatism consists in local treatment of the urethra, combined with general treatment of the arthritis. He points out that urethral arthritis is either due to the migration of the gonococcus or some other microbe from the urethra to the joints, or to the absorption of their toxins. Hence (1,) if it is due to the migration of gonococci to the joint, as we know from experimental evidence and from the fact that they have been rarely found except in acute cases, gonococci do not flourish in the joint, the rational treatment is to cut off the source of supply in the urethra ; (2,) If it is due to the migration of other microbes or to the absorption of toxins, we may assume that all exacerbations are due to reinfection of the joint from the urethra. Here the same treatment applies, and may have to be continued after the joints are well. The local treatment carried out by the author in ordinary cases consists in the internal administration of a pill containing **Methyl Blue** and **Boric Acid,** or **Urotropin,** combined with lavage with **Permanganate of Potash,** and injections and instillations of **Protargol.**

Wilson[5] recommends for use in gonorrhœal rheumatism :—Syr. Ferri Iodidi ʒs. Dose to be increased gradually.

REFERENCES.—[1]*Quart. Med. Jour.*, Nov., 1900 ; [2]*Die Gonorr. Gelenkentzundung*, Berlin ; [3]*Münch. Med. Woch.*, 38, No. 3, 1901 ; [4]*Amer. Jour. of Cut. and Gen.-Urin. Dis.*, Jan., 1900 ; [5]*Med. Rec.*, Aug. 18, 1900.

RHEUMATOID ARTHRITIS. *R. Hutchison, M.D.*

In opening a discussion on the relation of this disease and of chronic rheumatic affections to acute infective rheumatism, which took place at the Chelsea Clinical Society on March 23, 1901, Dr. A. E. Garrod said that a glance through the contents of any modern text-book sufficed to bring home the fact that as regards the classification of diseases we were living in a period of transition. Out of a primitive category of arthritis the various distinctive forms of articular disease had been successively differentiated. The terms "rheumatism" and "rheumatic" were perhaps more loosely used than any other in the vocabulary of medicine, and three main ideas appeared to underlie their various applications—namely, the ideas of pain, of causation by chill, and of implication of joints. It should not be too much to ask that in medical literature the term "rheumatism" should be limited to acute rheumatism, and to conditions believed to be products of the same morbid process or sequelæ of its activity. There were nowadays few in this country who refused to recognise that acute rheumatism was an infective disease. There were few who would probably not be prepared to admit that rheumatism was a systemic malady in which heart and joints were alike apt to suffer, and which might also implicate the skin, nervous system, and other structures. The rheumatic process might smoulder on even for years, and in children a veritable rheumatic cachexia was not infrequently seen. In adults an attack of rheumatic fever might be preceded or followed by frequently repeated minor rheumatic manifestations. An acute attack might leave one or more joints more or less seriously damaged, and some permanent deformity might also follow from repeated attacks. By the term "rheumatoid" or "osteo-arthritis" they were in the habit of confusing together several distinct forms of articular disease. Stating the grounds for his belief that they were dealing with no single defined malady, he gave in detail the facts concerning three cases illustrating his contention. The first showed the onset of a disease in a patient thirty years of age, which affected many joints, and which was specially apt to commence in the hands and feet. In the second case, a woman sixty years of age, a multiple joint affection was developed similar in its distribution to the first, but the enlargement was due to an increase in size of the ends of the bones. For convenience of reference those two types illustrated by the cases quoted might be referred to as the fusiform in the case of the younger patient, and the nodular form in the case of the older woman. The third example was an instance of the crippling form *par excellence*.

In addition to such polyarthritic forms there was yet a fourth group of cases in which only one or two joints were involved, as, for example, in the hip-joint affection of elderly people. It was difficult to say definitely how far the members of these several groups differed in their morbid anatomy. The condition described as rheumatoid arthritis in children resembled in many respects the fusiform rheumatoid arthritis of adults. In their clinical aspects the joint lesions were very similar, and in such cases a fatal ending at a comparatively early stage was not uncommon.

The changes found in the joints *post mortem* did not conform in the least to the classical descriptions. The chief lesion observed was thickening and undue vascularity of the synovial membrane. In a case of the extremely crippling kind, where the disease had been in progress from the age of seventeen to that of thirty-seven, fixation of every limb had ensued, and the case had been diagnosed as rheumatoid arthritis by several highly competent observers. The conditions, however, found *post mortem* were at variance with the teaching that one of the special features of the malady was the absence of bony ankylosis, for in every joint examined some such ankylosis had occurred.

It had been suggested that the changes ordinarily described as characteristic of rheumatoid arthritis were merely lesions apt to occur in joints which had become the seat of chronic disease of various kinds. The question for discussion was whether or no rheumatoid arthritis, or, as he preferred to say, any of the diseases included under that name, stood in any direct relationship to acute rheumatism. The question arose whether such secondary rheumatoid arthritis was merely a continuation of the form of malady, or an example of a second disease developing in a subject weakened by the antecedent attacks. In the great majority of instances rheumatoid arthritis of any form appeared as a primary malady. Such experience as he had had led him to range himself with those who held that sufferers from rheumatoid arthritis showed no greater liability to valvular disease than others not so affected. Possibly before long bacteriology might throw such light upon the whole problem of the relation of rheumatoid arthritis to rheumatism as would render further discussion futile The nodular or senile cases with their slow progress and essentially chronic character, presented many features which suggested that the lesion was of the nature of a trophic change in the joints. Such a view received support from the resemblance seen to those lesions met with in certain nervous diseases. Among the predisposing causes of the more acute cases debilitating influences

took the first place. The relation of rheumatoid arthritis to gout was a subject of considerable interest and not a little difficulty, but he could see no valid reason for the belief that gout played any part in the causation of the more acute forms.

Hyde[1] insists upon the usefulness of **Massage**, along with active and passive **Movements**, in rheumatoid arthritis, and believes that by their timely application much crippling might be prevented. He says that the effects of massage and movements upon cases of rheumatoid arthritis may, broadly speaking, be divided into two categories. First, an improvement in the quality of the blood and general circulation, together with renewed growth of the muscles and other tissues; and second, the purely mechanical effects of restored freedom and movement to joints formerly more or less fixed and immoveable.

La Presse Médicale[2] also has an article on this subject. Many of these cases are absolutely incurable, but at the same time we should direct our energies as far as possible to the amelioration of the wretched condition of the patient. In the way of local applications a large number of remedies have been suggested. De Mussy employs the following ointment with asserted good results :—

Extract of Belladonna Extract of Conium Extract of Hyoscyamus āā grs. xv	Extract of Opium grs. xv Lard ℥ij

On the other hand, Teissier and Roques regard an ointment made of **Dermatol** as particularly useful for the moderation of inflammation and pain. The quantity employed is usually a drachm of dermatol to an ounce of vaseline. In some instances it may be made stronger with advantage. During the periods of calm an ointment of **Pilocarpine** is said to be useful for the purpose of producing local sweating. Care should be taken that enough of it is not absorbed to produce systemic depression. Constantin Paul employs in his hospital wards hot bricks placed about the painful joint. In some instances steam baths, hot-air baths, or hot-water baths are distinctly valuable, either applied locally or to the general body. Surgical operations undertaken for the relief of the deformity produce bad results. Massage and gymnastic movements must be very cautiously instituted. Sometimes their employment will cause disappearance of some of the rigidity. During the period of quiescence it is sometimes valuable to apply **Electricity** to the inflamed part; the negative pole being placed to the spine in the cervical region, and the positive pole to the diseased part.

In the way of internal treatment the **Iodides**, of course, are the

most important drugs both for their influence upon the tissues themselves and for the relief of pain. They may be given in the form of the **Tincture of Iodine** in the dose of eight drops after each meal. These doses should be gradually increased a drop each day. Often the tincture of iodine can be given advantageously in black coffee. It must always be carefully diluted and taken after food, so that it will not irritate the stomach. Iodism is rarely produced by these ascending doses if they are properly administered. Should gastritis, vomiting, diarrhœa, or abdominal pain come on, the iodine must of course be stopped. Sometimes pain develops in the parotid glands. The **Iodide of Potassium** in doses of 30 to 60 grains is often valuable in these cases, or the iodide of sodium, iodide of starch, or iodide of iron may be used. The iodide of starch may be given in the dose of as much as an ounce a day, and may be administered in the following prescription :—

℞ Iodide of Starch ʒvj Water ʒxj

Syrup, enough to make a quart.

Two or three dessertspoonfuls of this syrup may be given twice or thrice a day.

In other instances **Iodide of Lithium** in doses of 6 to 10 grains may be used. After the iodides, **Arsenic** is, of course, the standard remedy. It should be given in the dose of two to six drops of Fowler's solution after each meal. After a certain amount of tolerance is developed, it may be gradually increased, but should not be pushed to the point at which it develops nausea, diarrhœa, or dry cough. Colchicum, aconite, and salicylate of sodium are seldom used with any advantage.

References.—[1]*Scalpel*, June, 1890 ; [2]April 11, 1900.

RHINITIS. *W. Milligan, M.D.*

Atrophic Rhinitis (*Ozæna*).—The following treatment has been highly recommended : Aluminis aceto tartar. (10 per cent solution) one drachm to the pint of warm water for syringing two or three times daily, followed by spraying with a solution of Ext. hydrastis fluid, one drachm to the pint of warm water.

Somers[1] recommends spraying with solutions of **Hydrogen Peroxide.**

Hamm[2] recommends after careful cleansing of the nasal passages, the insufflation of a powder containing 25 per cent of **Citric Acid** and 75 per cent of **Sugar of Milk.** The strength of the powder can be gradually increased according to the tolerance of the patient.

Fibrinous Rhinitis.—Gill and Gillies[3] record a case occurring in a child, aged five. The right nostril was found filled up with a

white mass like blotting paper. It was removed without any pain to the patient by means of a forceps, but with slight bleeding. Bacteriological examination yielded an almost pure culture of a bacillus identical with the bacillus of diphtheria.

REFERENCES.—[1] *Therap. Gaz.*, March, 1900; [2] *Münch. Med. Woch.*, April 11, 1899; [3] *Aust. Med. Jour.*, Oct. 20, 1900.

RICKETS. *Henry Dwight Chapin, M.D., New York.*

J. L. Morse[1] considers rickets a chronic disease of nutrition. Rachitic children are often fat and heavy, but the muscles are soft and flabby. Atrophic babies are almost never rachitic. Some of the earliest symptoms are fretfulness, languor, restlessness at night, kicking off the bed-clothes, sweating of the head, rolling of the head, boring the head into the pillow, and night terrors. Gastro-enteric disturbances, if persistent, are always suggestive, and likewise delayed dentition. The intelligence is almost never impaired, and Kernig's sign is not found. Localized areas of partial atelectasis and emphysema are not uncommon as the result of thoracic deformities. In treatment, the best form of fat is found in milk. Cod-liver oil is a valuable addition to the food. The author has never seen any specific effect from phosphorus. The lime salts and the hypophosphites are regarded as valueless, unless as tonics. Plenty of fresh air and sunlight are desirable.

Stölzner[2] has tried **Supra-renal Extract** in the treatment of rickets with the following results: (1,) Supra-renal extract has a favourable effect on the general condition of the child, on the nervous manifestations, on the profuse sweating, and, above all, on those cases where cranio-tabes is present. Often all these symptoms are greatly ameliorated in the space of a single fortnight. (2,) Children treated in this manner rapidly gain the power of walking and running; the softness of the thoracic walls quickly disappears, and teeth are erupted. (3,) The treatment seems to influence only to a very small extent the enlargement of the epiphyses, the rickety rosary, the dimensions of the fontanelle, and the spasm of the glottis. (4,) The amelioration of all the symptoms is most marked during the first eight days of treatment, after which period the progress is much less rapid. (5,) Even in cases complicated by syphilis, bronchitis, and broncho-pneumonia, the treatment is almost invariably followed by a very considerable improvement in the rickety symptoms.

Sasuchin[3] examined the spleen in sixty-six cases of rickets. Almost always the organ was hypertrophied, the exception being in cases in which the athrepsia was advanced, and here the spleen

in weight and size was close to the normal or even sometimes atrophied. The histological lesions were those of interstitial splenitis.

Pritchard[4] reaches the following conclusions as to the cause of rickets: (1,) The symptoms of rickets are such as can be explained by the presence of an excess of lactic and similar acids in the system. 2,) Excess of lactic acid can be generated when the food supply carbohydratic chiefly) is relatively excessive, or when the available oxygen is relatively deficient. (3,) Infants fed on excessive diets can develop symptoms of rickets, although no element necessary for metabolism is absent from the food. (4,) Such cases can be cured by reducing the food to normal proportions, without in any other way altering the treatment. (5,) The cause of rickets in these cases, and probably in all cases, is excess of some element, and that element probably carbohydrate.

REFERENCES.—[1]*Phila. Med. Jour.*, vol. v, No. 21; [2]*Jahrbuch f. Kinderh.*, bd. i, 1900; [3]*Ibid.*; [4]*Arch. Ped.*, vol. xviii, No. 2.

RINGWORM. *Norman Walker, M.D.*

Observations on the nature and varieties of the fungus continue to be made, and the number of variations grows ever greater. The most interesting paper of the year is one by Dr. Bunch.[1] The object of his investigations was to trace out the animal infection, which is so often apparently associated with the disease. He examined a great many cases in vain, but was successful in several in directly tracing the growth to an animal with which the patient had been in contact. He cultivated the fungus from both sources and showed the cultivations to be identical. The responsible animals were horses, terriers, cats, a canary, and a calf. His results do not confirm Sabouraud's statement that the microsporon is confined to the human subject. One of the patients, who contracted the disease from a cat, showed certainly unusual precocity, for we are told that, though only four weeks old when brought to hospital, he had been *playing with the cat.*

Dr. Colcott Fox[2] showed to the Dermatological Society a brother and sister suffering from ringworm, and the sister also from alopecia areata. The areas were not coterminous, although the alopecia had invaded some ringworm areas. The typical exclamation hairs were entirely free from fungus.

Jackson[3] says that the best treatment is an ointment composed of ½ to 1 drachm of **Iodine** to 1 ounce of goose-grease, which should be applied by means of a stencil or stiff paint brush.

The depilatory powers of the **X-rays** have been taken advantage of in the treatment of this disease. In some cases they are brilliantly

successful, for complete depilation transforms ringworm of the scalp into the same easily-cured disease as ringworm of the glabrous skin. Subjects vary, however, so much in their reaction to the rays that it often appears almost a waste of time to use this remedy.

REFERENCES.—[1]*Brit. Med. Jour.*, Feb. 9, 1901; [2]*Brit. Jour. Derm.*, March, 1901, p. 94; [3]*Jour. Cut. Dis.*, June, 1901.

SALINE INJECTIONS. (See "Transfusion.")

SALIVARY FISTULA. *Priestley Leech, M.D., F.R.C.S.*

This troublesome condition is not always easy to treat successfully. The methods of Langenbeck and Riberi, which are identical, are best for cases where the fistula involves the anterior portion of the canal. The part of the duct behind the fistula is exposed, dissected out, and passed into the mouth directly in front of the masseter muscle through a perforation made through the cheek. This operation is not easily done where a large portion of the duct is destroyed, or there is a lot of cicatricial tissue. For these conditions, Dejardin and Gulikers[1] suggest the following method: An incision is made in the direction of the duct, and the outer portion of the canal, together with the masseteric prolongation of the parotid gland, is exposed by careful dissection. The opposed margins of the gland and the masseter muscle are separated, and after this has been done the inner surface of the masseter is detached from the outer surface of the ascending ramus of the mandible. Finally, the exposed and dissected portion of gland is thrust between the masseter and the bone, and through an orifice made in the buccal mucous membrane, to the margins of which it is fixed by suture.

REFERENCE.—[1]*Ann. de la Soc. Belge de Chir.*, Oct., 1900.

SCABIES. *Norman Walker, M.D.*

Schiscka[1] has examined the skin from different parts of the body, and confirms Unna's observations that the burrow lies mainly in the middle part of the horny layer, and that the acarus is usually found more superficially than the basal layer. In certain regions where the skin is peculiarly thin the acarus may reach the rete.

Alexander[2] reports three cases contracted from domestic animals. The disease, he says, runs a milder course than ordinary scabies, and is readily influenced by treatment. He thought that the localities affected by ordinary scabies were usually exempt. There was no predilection for any particular region, and typical burrows were as a rule wanting.

Pfeiffenberger[3] strongly recommends **Epicarin** as a remedy in this disease, and it also has Kaposi's approval. It is especially useful

in children, causes no irritation, and the disease usually disappears after five or six inunctions. The formula he used was :—

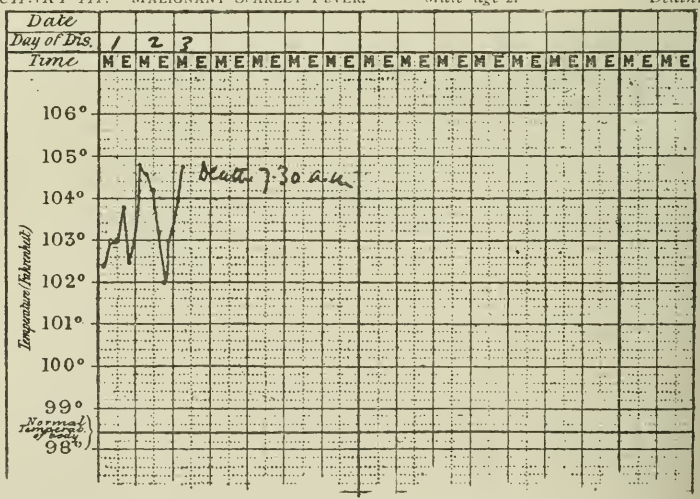
R	Epicarin	7	Lanolin	15
	Cret. Alb.	2	Axung. Porc.	45
	Vaseline	30		

REFERENCES.—[1]*Arch. f. Derm. u. Syph.*, Sept., 1900, p. 313, 3 plates ; [2]*Ibid.*, Bd. lii, Heft 2 ; [3]*Derm. Zeits.*, Dec., 1900.

SCARLET FEVER. *Edward Wilberforce Goodall, M.D.*

PATHOLOGY.—Gordon[1] has continued the researches of which we gave a short account in the last volume of the *Medical Annual*. He has now demonstrated that in addition to the conglomerate formation in broth to which the streptococcus of scarlet fever owes its name (streptococcus conglomeratus), the organism assumes wedge-shaped and bacillary forms when it is passed through culture media (varying for different specimens of the streptococcus) or through mice. These are the two characteristics which chiefly

CHART III. MALIGNANT SCARLET FEVER. *Male age 2.* *Death.*



serve to distinguish the organism of scarlet fever from the streptococcus pyogenes. Gordon, moreover, has failed to obtain the streptococcus conglomeratus from normal throats, or from certain inflammatory affections of the throat other than scarlet fever. He is of the opinion that the streptococcus conglomeratus is the same as the streptococcus described by Baginsky and Sommerfeld[2] as probably

being the cause of scarlet fever. It is true that the latter observers failed to differentiate their organism from the streptococcus pyogenes; but they do not appear to have investigated the behaviour of the organisms on different media so minutely as Gordon has done. Gordon further suggests that the diplococcus scarlatinæ described by Class[3] is merely the streptococcus conglomeratus under another form and name.

[But it must be confessed that a perusal of Gordon's, and Baginsky's and Sommerfeld's papers on the one hand, and Class's on the other, indicate that the two sets of observers are dealing with two totally different organisms.—E.W.G.]

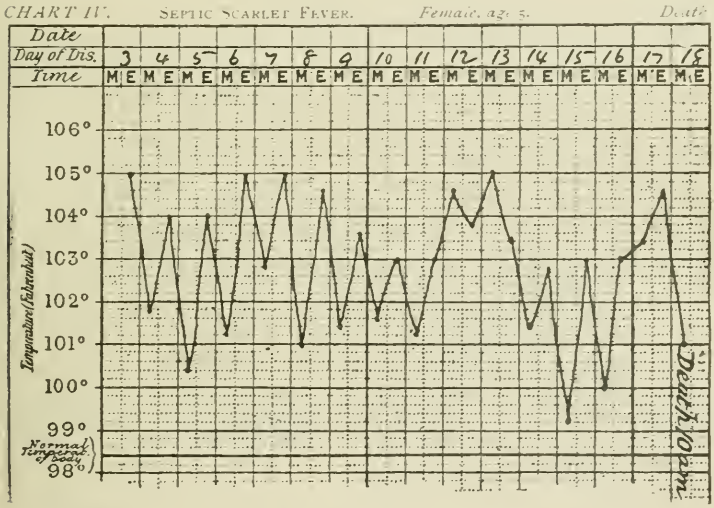


CHART IV. SEPTIC SCARLET FEVER. Female, age 5. Death
Date
Day of Dis. 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Time M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
106°
105°
104°
103°
102°
101°
100°
99°
98°
Temperature (Fahrenheit)
Normal Temperature of body
Death 10 p.m.

TREATMENT.—Hardly any of the acute infectious diseases is so variable in its intensity as scarlet fever. But three main forms of the disease may be recognised, between which gradations exist. The first (*Chart III*) is the *malignant* or *toxic form*. There is from the first a high temperature, a very frequent pulse, vomiting, sighing respiration, and delirium, but the throat symptoms are slight. Death nearly always occurs, usually within three or four days, from heart failure, the patient being cyanosed and comatose. Secondly, there is the *anginous* or *septic form* (*Chart IV*). The constitutional symptoms may or may not be severe from the commencement; but the most prominent feature is the sloughing and ulceration of

the fauces, consequent upon which there is septic absorption. Septic complications are common (purulent rhinorrhœa, otitis media, adenitis, and arthritis). The temperature is usually raised, but irregular. There is much wasting, and the patient often dies, exhausted, at the end of two to four weeks. When recovery ensues, convalescence is very tedious. Lastly, we have *simple scarlet fever* (*Charts V and VI*), in which the constitutional symptoms are of no severity, the throat affection is slight or wanting, and the pyrexia moderate. In a few cases the temperature is not raised at all.

CHART V.

SIMPLE SCARLET FEVER.

Female, age 8. *Recovery.*

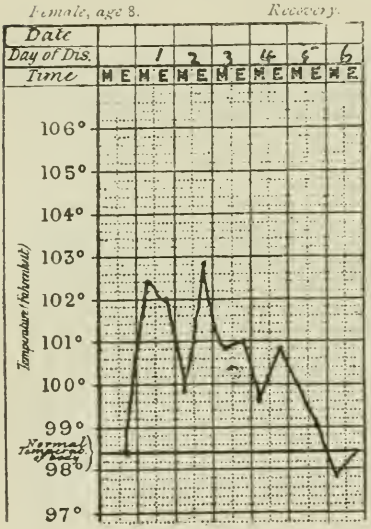
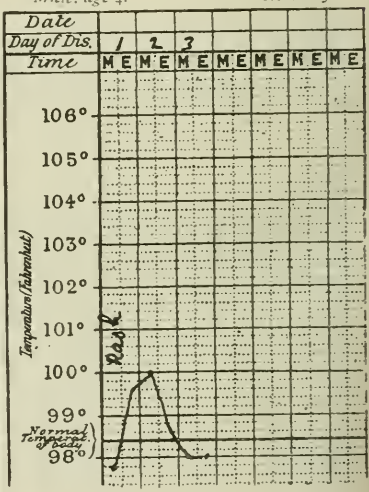


CHART VI.

SIMPLE SCARLET FEVER.

Male, age 4. *Recovery.*



The treatment of *malignant* scarlet fever is, unfortunately, nearly always without avail. But the writer has more than once seen recovery take place. It is necessary that the patient be kept absolutely recumbent, otherwise instantaneous death may occur. **Diffusible Stimulants** should be given freely, preferably by subcutaneous injection. Delirium and pyrexia are best treated by sponging or packing with cold or tepid water. Nourishment should be given in the form of **Peptonised Milk**, or if there be frequent vomiting, by nutrient enemata.

The *simple* form of the disease requires very little treatment by drugs. During the pyrexial period, and for three or four days

beyond it, the patient should be kept on a milk and farinaceous diet. He may then at intervals of a few days be got on to fish, poultry and meat, with green vegetables. About a week after the temperature has become normal the patient may be allowed to sit up for a few hours, and after a few more days he may be permitted to dress and walk about the room. When he may be allowed out of doors, depends very largely upon the time of the year and the condition of the weather. In warm summer or autumn weather there is no reason why he should not be outside for an hour or two daily almost as soon as he is allowed up in clothes. It is perfectly true that even the mildest cases of scarlet fever may be followed by serious sequelæ, such as nephritis or otitis. But these affections are prevented neither by a prolonged stay in bed, nor by an exclusive milk diet carried on for three or four weeks. With respect to nephritis, it is necessary to remember that it often first shows itself by slight albuminuria; hence it is very important to examine the urine frequently, not less often than every other day. On the first appearance of albumin, the patient should be kept in bed, placed again upon milk diet, and treated as a case of nephritis until the urine is free from albumin. As soon as the patient convalescent from scarlet fever is allowed to get up, he may have a warm bath every evening just before going to bed. Inunction of the skin is unnecessary unless the patient complains of irritation, in which case lanolin or cacao butter should be applied once or twice a day.

In *septic* scarlet fever the most important point in the treatment is careful and assiduous nursing. Many a patient owes his life as much to the nurse as to the physician. In this form of the disease profuse irritating discharges often pour, in spite of treatment, from the nostrils, mouth, and ears for days together. These cavities and the parts about their orifices should be kept scrupulously clean by frequent irrigation, washing and swabbing with non-irritating antiseptic lotions, of which **Boracic Acid** is perhaps the best. The ulcerated surface of the fauces should be carefully swabbed three or four times a day with a 1 in 40 to 60 solution of **Carbolic Acid**, or with a solution of **Chlorate of Potash** and **Free Chlorine** in water, made by pouring hydrochloric acid upon chlorate of potash in a large bottle and shaking the mixture with water, in the proportion of a drachm and a half of strong acid to 4 drachms of chlorate of potash and 30 ounces of water. Baginsky advises the insufflation of equal parts of **Sozoiodol-sodium** and precipitated **Sulphur** thrice daily. The diet should be chiefly milk, peptonised if there is any difficulty in digesting it. Prepared foods may also be given with

advantage. Meat extracts, in small quantities, are useful in some cases. In suitable weather convalescence is greatly hastened by taking the patient out of doors on a couch.

With respect to the more common *complications* of scarlet fever, the writer will briefly indicate what in his experience is the best treatment.

Adenitis and Cellulitis: Warm **Boracic Fomentations**, frequently renewed; do not incise until you are pretty certain pus or slough are present.

Otitis: Irrigation with warm **Boracic Lotion** (saturated) three or four times a day, followed by instillation of an emulsion of **Iodoform** in glycerin. In cases where no improvement follows this treatment, 1 in 40 **Carbolic** with **Sulphate of Zinc**, 2 grains to the ounce, should be tried; or **Nitrate of Silver**, 5 grains to the ounce, or a weak solution of **Creolin.**

Mastoid Abscess: After opening, do not at once open the mastoid antrum or cells; as often, even with an abscess, these parts are quite healthy. But if the abscess will not heal up, or if there is distinct evidence of bone-disease, then open up the antrum (Schwartze's operation), and, if necessary, throw it and the middle ear into one cavity (Schwartze-Stacke operation).

Rheumatism.—**Salicylate of Soda** in 10- to 20-grain doses every four hours.

Nephritis: Milk diet; **Saline Purgatives** or soap and water enemata; warm baths; imperial drink or barley water; when the urine is scanty, dry cupping; convulsions, chloroform.

Delirium: Wet-packing with sheets wrung out of tepid water; **Antifebrine**, 2 to 5 grains according to age of patient, repeated after two or three hours if necessary; or **Chloral Hydrate** and **Bromide of Potassium.**

Pyrexia Wet-packing or sponging; **Antifebrine.**

REFERENCES.—[1]*Report Med. Off. Loc. Gov. Board*, 1899-1900; [2]*Berlin klin. Woch.*, July 2 and 9, 1900; [3]*Chicago Med. Rec.*, May, 1899.

SCIATICA. *Graeme M. Hammond, M.D., New York.*

Menaga[1] reports a case of hemiplegia associated with agonizing pain in the paralyzed leg, which was permanently cured by one subarachnoid injection of **Cocaine.** Encouraged by the success in this case, he treated in a similar way a case of sciatica which had failed to yield to ordinary medical treatment. He injected 0·75 c.c. of a 2 per cent cocaine solution. Pain disappeared at once, and did not return. Similar excellent results have been obtained by Marie and Guillani,[2] and by Pulls.[3]

At a meeting of the Société des Hôpitaux, of Paris, Bernard[4] reported he had obtained very encouraging results in sciatica from **Saline Injections.** In one case a man had suffered for six years. The disability was absolute, the pain was very acute, and the insomnia was constant. The method employed was to inject 5 c.c. of normal salt solution at the most painful points. In some cases three or four injections were given on the same day. The first night after the injection the patient slept well, the improvement continued, and at the end of a fortnight he was free from all pain and could walk easily. In more than twenty cases, some of which were very severe, the greater number were improved in two or three days, and almost completely cured in a period varying from eight to twenty days.

Ghetti[5] prefers deep injections of **Salophen.** He uses a solution of 15 grains of salophen in 2½ drachms of sterile, slightly alkaline water. The injections were repeated on alternate days, and the patients were kept absolutely quiet. After the sixth injection the pain was considerably diminished, and after the eleventh it disappeared completely. After the fifteenth the patients were allowed to walk about a little. After thirty injections the patients were completely cured.

Klemperer[6] has recently published his results obtained by administering **Methylene Blue** in twenty-seven cases of sciatica. In eight cases it failed entirely. In six cases the pains disappeared in five days. In the remaining thirteen cases the pains were greatly diminished. From three to six capsules, each containing about 7 grains, were given daily. Slight gastric disturbances occurred, but they involved no serious inconvenience, and any pain during micturition was easily annulled by adding a little nutmeg to each dose. The drug should be absolutely pure, otherwise gastric, toxic, and diarrhœic troubles will follow.

REFERENCES.—[1] *Therap. Gaz.*, July 15, 1901; [2] *Gaz. Hebd. de Méd. et de Chir.*, No. 27, 1901; [3] *La Rif. Med.*, No. 44, 1901; [4] *Lancet*, April 6, 1901; [5] *New York Med. Jour.*, Oct. 27, 1901; [6] *Brit. Med. Jour.*, Nov. 10, 1901.

SCOLIOSIS. (See "Spine, Lateral Curvature.")

SCURVY. *R. Hutchison, M.D.*

Jackson and Vaughan Harley[1] bring forward a considerable amount of evidence, drawn from the experience of Arctic explorers and others, in support of the view, first propounded by Professor Torup, of Christiania, that scurvy is essentially due to poisoning

by the ptomaines of tainted animal food. In order to confirm or negative this view, a series of experiments was carried out on monkeys. Three groups of animals were taken. One set were fed on fresh meat, rice and maize; the second on slightly tainted meat, with rice and maize; while the third set got the same diet as the second, with addition of an apple or banana. The result of the experiment was that the monkeys of the first group remained comparatively healthy; those of the second developed distinct symptoms of scurvy (spongy gums, hæmorrhage from the bowels, etc.); while those of the third showed similar symptoms, but less pronounced in degree. The blood of the affected animals showed marked chlorosis and leucocytosis, and some excess of fibrin.

The writers consider that these experiments afford important confirmation of the conclusion derived from Arctic experience, that the presence of fresh vegetables or lime-juice in the diet is not alone sufficient for the prevention or cure of scurvy, but that we must regard the condition of the food in general, and especially the state of preservation of the meat, as the essential factor in the etiology of the disease.

Dr. Martinord[2] reports that four or five drops of the **Tincture of Iodine** in a small glass of brandy, thrice daily, relieved in a few days, and soon cured, a patient under his care. A second instance, even more remarkable, was one showing much subcutaneous hæmorrhage, gangrenous wounds, and diarrhœa.

REFERENCES.—[1] *Lancet*, April 28, 1900; [2] *Klin. Therap. Woch.*, 1899, No. 29, s. 950.

SEMINAL VESICULITIS.

J. W. Thomson Walker, M.B.Ed., F.R.C.S.E.

TREATMENT.—Since Fuller[1] drew attention to the importance of sub-acute and chronic seminal vesiculitis as a cause of persistent urethral discharges, attention has been directed towards the treatment of this condition. Together with the vesicular inflammation there is nearly always congestion or inflammation of the deep urethra, but these conditions will disappear without local treatment when the inflammation of the vesicles is cured. The diagnosis of seminal vesiculitis is made by the finger in the rectum. The normal vesicles are not easily outlined, but when distended with inflammatory *debris* and retained secretion, they have a boggy elasticity which renders them readily palpable.

The principal treatment consists in emptying or "stripping" the vesicles, as it is called.

Thomas[2] recommends the following technique: The patient

stands with his legs straight, the feet a few inches apart, the body bent at a right angle, and the hands gripping the sides of the seat of a chair placed in front of him for this purpose. The object is to strip the nearest portion of the vesicle first, and then gradually work backward as far as the finger will reach. This is accomplished by two movements, one by strokes of the straight finger, the forearm and hand moving as one, forward and backward; the other with the tip of the finger after crowding the remaining closed fingers well into the perineum. In lean patients it is well to have the bladder emptied before manipulating, for we are then enabled to push the bladder down with the unoccupied hand over the pubes, without discomfort to the patient; and if, while pushing the bladder downwards, the patient retracts his abdominal muscles something additional is gained. In fleshy patients it is not easy to make an impression on the empty bladder by pressure above the pubic bones, here therefore a full bladder is preferable. As it is impossible to reach the upper extremity of the vesicles by the manœuvres mentioned, the writer is in the habit, as soon as all has been accomplished by the above means that is possible, of turning the palm of the hand upward. Now, by pushing the anus backward toward the coccyx with the commisure of the index and middle fingers, he is enabled to reach a much higher point, and then to strip the vesicles with the back, or nail surface, of the finger. Should there be resistance of the perineal muscles, Fuller recommends that the operator should place his foot upon a chair, and with the elbow well braced against the knee, exert such pressure as will enable the finger to reach the vesicle.

By any of these methods, however, it is only possible to palpate the lower half of the seminal vesicles, even if the forefinger be long. Dr. Eastman[3] has therefore introduced a "thimble" for massage and stripping of the seminal vesicles in order that the whole vesicle may be reached and treated. The thimbles have been designed to imitate as closely as possible the slightly-flexed finger. They are made of brass, nickel-plated, and long enough (3 inches) to add about $1\frac{3}{4}$ inches to the massaging finger. The distal end is broadened to the width of an inch, and swells rather flatly in its full breadth on the palmar surface. The shank of the thimble is slightly concave forward. The dilated distal end of the thimble is "loaded," and this feature, together with the curve in the shank of the instrument, makes it possible to secure considerable pressure upon the vesicle without additional flexion of the finger, simple withdrawal of the instrument over the distended vesicle producing all the pressure needed.

These instruments are only used after a careful examination has

been made with the naked finger to ascertain the exact condition of affairs.

REFERENCES.—[1] *Jour. of Cutan. and Genito-Urin. Dis.*, June and July, 1894; [2] *Int. Med. Mag.*, Jan., 1901; [3] *New York Med. Jour.*, Oct. 27, 1900.

SINUSITIS. *W. Milligan, M.D.*

Frontal Sinus.—In the treatment of chronic empyema of the frontal sinus the main difficulty is the establishment of free drainage. All obstructive lesions in the fronto-nasal region should be removed intra-nasally, *e.g.*, granulations, polypi, diseased anterior ethmoidal cells, etc., It is frequently necessary to remove the anterior one-half or two-thirds of the middle turbinated body to secure this result. Intra-nasal irrigation may be practised by means of a suitably curved cannula. It is, however, rarely found to be of lasting value. External operation consists in removing a portion of the anterior wall of the sinus, curetting the diseased mucosa, and the making of a large opening into the corresponding nasal passage so as to secure a free vent for all discharge. The soft parts should be stitched up at the time of operation with the exception of a small portion of the inner end of the incision. Through this a drainage tube may be passed and brought out at the nose, or a strip of gauze may be packed into the sinus and removed gradually according to circumstances.

H. Tilley recommends removing a few inches of the gauze every third or fourth day (providing temperature, pulse, etc., are good), until the whole length of the gauze has been removed and the cavity is lined by a layer of healthy granulation tissue. He considers that success in operating upon chronic frontal sinus empyema depends upon three main factors. (1,) Removal of the anterior end of the middle turbinal and all chronic inflammatory products in the mid-meatal region, before proceeding to the external operation; (2,) Making a free passage into the nose; (3,) Careful curetting of the diseased mucous membrane, followed by packing with gauze until a healthy lining of granulation tissue is produced.

Multiple Sinusitis.—In combined frontal ethmoidal and sphenoidal empyemata, Taptas[1] recommends prolonging the ordinary Luc's incision downwards in the middle line of the nose to the lower third of the nasal bone. The frontal sinus is then opened through its anterior wall, a part of the nasal process of the superior maxilla being cut away at the same time. The upper half of the opening allows of easy access to the recesses of the frontal sinuses, whilst through the lower half the ethmoidal cells and the sphenoidal sinus are readily reached.

Sphenoidal Sinusitis.—Soubert[2] finds that the most usual age for this disease is between twenty and forty-five. The exciting cause may be the bacillus of influenza, the pneumo- or diplo-coccus of pneumonia, or more usually staphylococci or streptococci.

Infection may take place directly in connection with such general diseases as influenza, typhoid fever, etc., or after such chronic diseases as syphilis. Pus may form within the sinus or between the mucous membrane and the bony parietes, or the bone itself may be the seat of a primary caries, *e.g.*, in syphilis. Secondary intra-cranial abscesses following sphenoidal sinusitis are rare, but phlebitis of the sinuses is comparatively common. He prefers Jacob's method of catheterisation to that recommended by Zuckerkandl.

REFERENCES.—[1]*Jour. Laryng.*, Nov., 1900; [2]*Lancet*, Nov. 3, 1900.

SKIN GRAFTING. *Priestley Leech, M.D., F.R.C.S.*

Bianchi and Fiarani[1] record a successful case of grafting with chicken skin, in a country-woman aged fifty. A live chicken was taken, the head and feet wrapped in carbolised gauze, and the body well washed and brushed with soap and water, then with 1 per cent carbolic, and finally rinsed with distilled water. From the breast fourteen dermo-epidermic grafts were taken, each fully $\frac{1}{2}$ of an inch square, and placed on the wound. This was dressed with boiled water and a film of sterilised gauze, and covered with sterilised wool and gauze. The grafts took, excepting three, and the skin had the appearance of human skin.

REFERENCE.—[1]*Gaz. deg. Osped.*, Dec. 2, 1900, quoted in *Brit. Med. Jour.*

SLEEPING SICKNESS. *James Cantlie, M.B., F.R.C.S.*

J. Howard Cook[1] describes sleeping sickness in Uganda. The observation is a very important one, especially as regards the geographical distribution of the disease. Until this article appeared the West Coast of Africa was the only region in which it had been observed, and its appearance in Uganda indicates but too surely a possibility of this terrible disease spreading. The association of sleeping sickness with filaria perstans has been repeatedly insisted upon, and if the disease stands in the relation of cause and effect to the presence of this blood-worm, then should the two be found to proceed co-laterally. This would appear to be the case, for Cook's observations extend not only to the recognition of the disease, but also to the presence of filaria perstans in the blood of the persons affected by the sickness. There have been several confirmations

of the fact that sleeping sickness has advanced beyond the West Coast districts. Sims[2] saw persons suffering from the disease in the neighbourhood of Stanley Pool, on the Congo. Daniels[3] heard of the disease at the south end of Lake Tanganyika, a feeder of the Congo, and Manson[4] reports having found the parasite in blood films sent from various places in the Congo basin. Cook's observation shows that the disease, and at the same time the filaria perstans, have together crossed the water-shed between the Congo and the Nile, and reached the upper reaches of the Nile. This being so, it is possible that the disease may spread along the Nile valley and reach the African littoral on the Indian Ocean. The further spread is possible, and with the opening up of fresh trade routes it may be rapid. The prospect is alarming, for it is impossible to avoid dreading that this deadly disease may attain a wide hold.

REFERENCES.—[1] *Jour. Trop. Med.*, July 15, 1901 ; [2] *Ibid.* ; [3] *Ibid.* ; [4] *Ibid.*

SMALL-POX. *Edward Wilberforce Goodall, M.D.*

DIAGNOSIS.—The following charts, four of small-pox and two of chicken-pox, serve to illustrate some points in the diagnosis of this disease.

Chart VII is from the case of an unvaccinated young man attacked with severe discrete small-pox. The chart commences on the fifth day of the disease and second of the eruption. *Chart VIII* is from a fatal case of confluent small-pox in an unvaccinated infant ; it begins with the fourth day of the disease and second of the eruption. *Chart IX* is from a case of very mild discrete small-pox. It begins with the second day of the disease, before the eruption has made its appearance. (Previous vaccination doubtful ; no marks on arms.) *Chart X* shows a mild prodromal period in a case of very slight and modified small-pox. The eruption was very scanty. Patient had been vaccinated in infancy and had good marks.

All these charts show the fall of temperature that occurs when the eruption comes out. *Charts VII* and *VIII* show the secondary rise of temperature that accompanies the pustulation of the eruption. *Charts IX* and *X* show that even in mild small-pox there is a prodromal period during which the temperature is raised. The prodromal period is usually of two days' duration ; but it may be only one, or three or four. The usual symptoms are headache, backache, rigors, vomiting and epigastric pain, thirst, sleeplessness, and delirium. The temperature is raised, 101° to 105° or 106° F., and the pulse-rate increased in frequency. With the appearance of the rash the

CHART VII. VARIOLA, SEVERE DISCRETE. *Male, age 27.* *Recovery.*

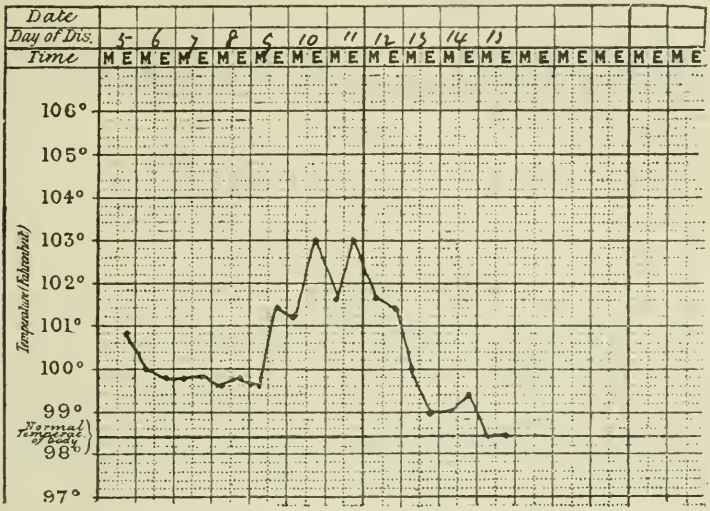

Date
Day of Dis. 5 6 7 8 9 10 11 12 13 14 15
Time M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
106°
105°
104°
103°
102°
101°
100°
99°
Normal temperat. of body 98°
97°
Temperature (Fahrenheit)

CHART VIII. VARIOLA, CONFLUENT. *Female, infant.* *Death*

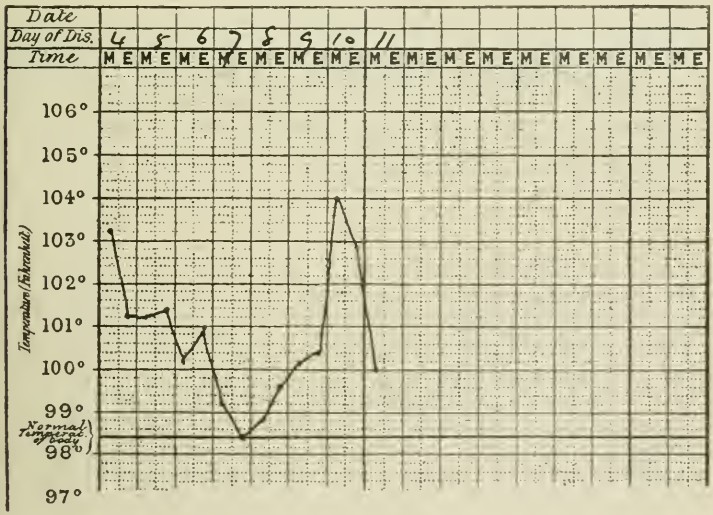

Date
Day of Dis. 4 5 6 7 8 9 10 11
Time M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
106°
105°
104°
103°
102°
101°
100°
99°
Normal temperat. of body 98°
97°
Temperature (Fahrenheit)

CHART IX.

VARIOLA, MILD DISCRETE.

Male, age 56. *Recovery.*

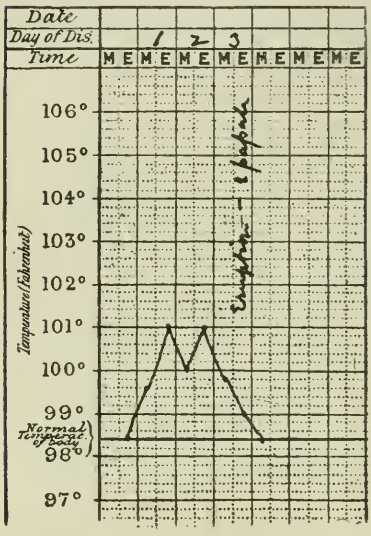


CHART X.

VARIOLA, MODIFIED.

Male, age 14. *Recovery.*

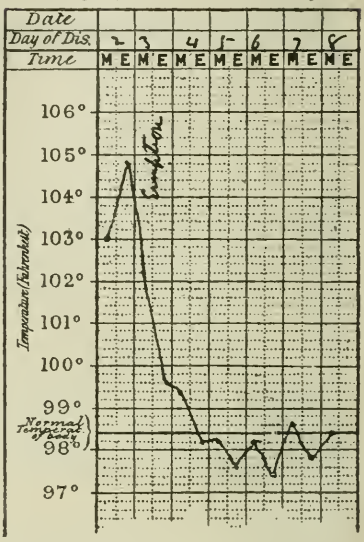
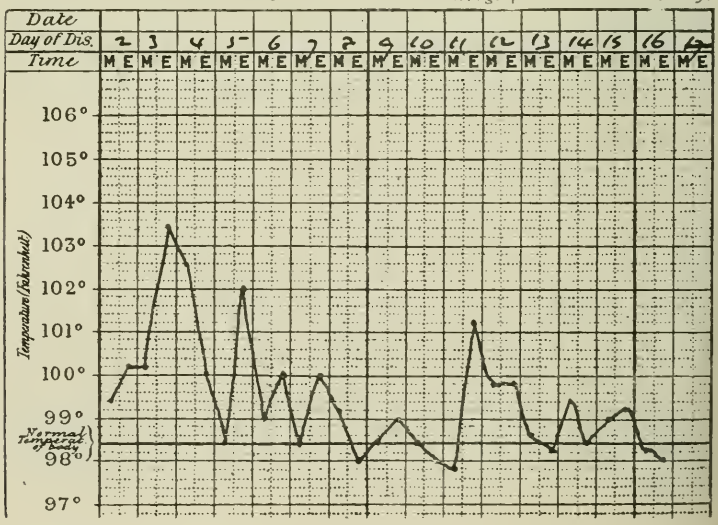


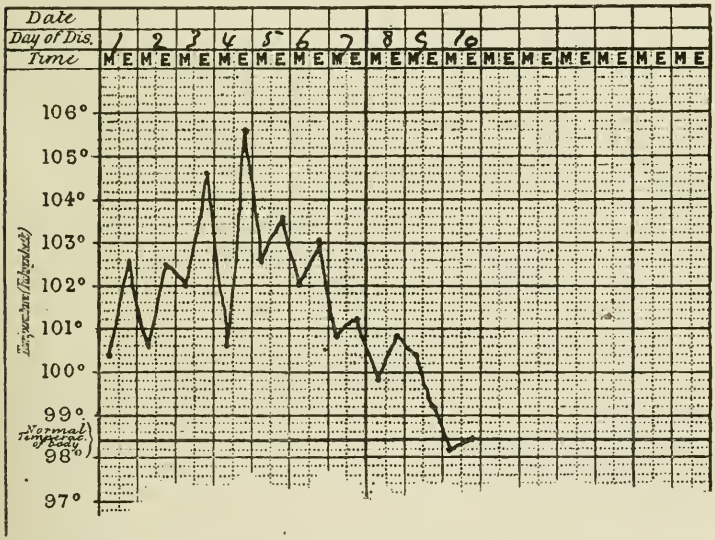
CHART XI. VARICELLA. *Male, age 4.* *Recovery.*


Date
Day of Dis.
Time
M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
Temperature (Fahrenheit)
Normal Temperature of body

temperature begins to fall, and the initial symptoms to abate; in mild and moderate cases this abatement takes place very suddenly.

In the eruptive stage the disease most commonly confused with small-pox is chicken-pox. Appended are two charts from severe cases of that disease. In the case from which *Chart XI* was taken the eruption was profuse, and continued to come out in crops for nearly a fortnight. *Chart XII* is from a case in which several of the pocks became gangrenous on the fourth day of the disease; in this case, also, the eruption was very profuse. In both cases the eruption came out on the first day of the illness.

CHART XII. VARICELLA GANGRENOSA. *Female, age 8.* *Recovery.*



In chicken-pox there is very rarely a prodromal period; but if there is, it is of short duration (one day), and the initial symptoms are slight. With the appearance of the eruption the temperature usually rises, though some cases of varicella show no pyrexia at any time; and there is irregular pyrexia as long as the eruption is coming out. The eruption of chicken-pox is more profuse upon the trunk than the face, and on the face than the limbs; it affects more the proximal than the distal portion of the limbs. It is occasionally seen upon the palate. In small-pox, on the other hand, the eruption affects mostly the face, hands, and wrists; it is more profuse upon the back

than the front of the trunk, and upon the distal than the proxima parts of the extremities. Usually it also appears upon the buccal mucous membrane. While the eruption of chicken-pox may continue coming out for several days, in small-pox it is all out in from one to three days, according to the severity of the attack. In chicken-pox vesicles can be observed at the time the eruption is first noticed. In small-pox, even in the modified form, there is a papular stage of some duration which precedes the vesicular stage.

TREATMENT.—The room or ward should be well ventilated and kept at a temperature of 55° to 60° F. When there is much eruption the bed-linen and coverings should be as light and soft as possible. The diet should be such as is usual in febrile conditions : Milk, broths, jellies, custard, etc., given frequently in small quantities at a time. To relieve thirst the patient may have ice to suck, and may be allowed to drink freely of water or lemonade. Difficulty in swallowing during the eruptive stage may necessitate administration of nourishment by enemata for a few days. Stimulants are not often required during the early stages, but may be found necessary in the pustular stage when there is much prostration.

Warm Baths may be given all through the illness. In cases where the prodromal symptoms are not severe they will relieve slight delirium and sleeplessness ; they allay the irritation of the pustular stage, and later help the separation of the scabs. In severe discrete and in confluent small-pox the continuous warm bath may be employed with immense relief to the patient.

It is important to keep some local application continually upon the skin, especially of the face—lint soaked in **Boracic Lotion**, or **Glycerin and Borax** ; or linseed-meal poultices thinly spread on lint, with vaseline and **Iodoform**. Itching may be relieved by sponging with **Acidulated Water,** 1 part of acetic acid to 3 of water. The pain caused by dermatitis is often relieved by **Compresses** of cold, even iced water, frequently renewed.

The delirium of small-pox requires most careful attention. The patient resists restraint and will endeavour to get his clothes and leave the room or ward, and, to attain his object, will attack his nurse or attendant. Hence a male attendant is often necessary. Much may be done by humouring the patient ; allow him to get up in dressing-gown and slippers and (carefully watched and tended) walk about the room ; he will soon become fatigued, and will then be easily persuaded to return to bed. **Opium** is a very useful drug in these cases, given in fairly large doses.

Cases of small-pox in which there is much eruption require most

careful nursing to prevent bed-sores. The mouth and nose should be frequently washed out with **Boracic Acid** lotion or **Liquor Sodæ Chlorinatæ.** MacCombie recommends as a good mouth wash, liquor potassæ, 1 part; pure carbolic acid, 1 part; water, 80 parts. It is also very important to keep the eyes clean; the edges of the lids should be kept from sticking together by the application of vaseline.

According to Begg,[1] **Salol**, in doses for adults of 10 grains every four hours, is most useful in checking the development of the eruption in the vesicular stage, and allaying the cutaneous irritation. Its administration should be commenced as early as possible, before the eruption makes its appearance. Biernacki and Jones[2] also speak favourably of the treatment by salol.

REFERENCES.—[1]*Scot. Med. and Surg. Jour.*, No. 3, vol. vi, 1900 [2]*Brit. Med. Jour.*, July 14, 1901.

SNAKE BITE AND VENOM. *James Cantlie, M.B., F.R.C.S.*

Capt. R. H. Elliott,[1] I.M.S., contributes interesting and useful information concerning the effect of snake-venom in animals, and the supposed immunity of some animals and men. It appears that the mongoose, the small rodent capable of fighting and killing venomous snakes, stands a dose of venom according to its weight far in excess of other animals. Taking the rabbit as the unit, it may be taken as proved that the rabbit, the dog, and the mongoose are to each other as 1, 2, and 20 (or more). The immunity of the mongoose would appear to vary with climate and inheritance, for where snakes are absent in any locality the immunity of the mongoose is lessened. Capt. Elliott describes contests between the mongoose and poisonous snakes, and concludes: (1,) That during a fight the mongoose likely receives incomplete bites, and therefore small repeated doses of the venom; (2,) The mongoose, when he pounces on the snake, seizes the snake by the jaws and probably drives its teeth into the poison sac, allowing the contents to escape, the mongoose at the same time swallowing some of the venom, and probably still further immunising itself.

Other animals besides the mongoose are credited with the power of killing snakes. Dogs, cats, guinea-fowl, and pea-fowl have each been known to defend themselves against and to kill venomous snakes. The question of the immunity of Indian snake charmers to snake-venom is a subject concerning which some doubt and mystery still prevails. Some of these men take drugs known to be quite useless; others swallow venom, or rub it into their limbs. A surprisingly large number of these charmers, however, seem to lose their lives in the pursuit of their vocation. The immunity

ascribed to snake charmers is either due to the fact that they have extracted or broken off the poison fangs, or that, knowing the cobra well, they are on their guard against its attacks.

TREATMENT.—McFarland[2] sums up the treatment of snake-bite as follows: (1,) Arresting circulation by placing a constriction around the limb between the bitten part and the heart; (2,) Incision and suction of the wound; (3,) Hypodermic injection of three to six drops of freshly made 10 per cent watery solution of chloride of calcium into about a dozen places around the wound; (4,) Strychnine hypodermically to stimulate the respiratory centre; (5,) Immediate and frequently repeated hypodermic injections of 10 to 20 c.c. of Calmette's **Antivenene.**

Selaginella Apus (Lin), a plant identified as one of the club mosses, and related to the fern family, is credited with being an antidote to snake poison and spider bites. Kent,[3] of Ingram, Va., U.S.A., states that he has seen curative results ensue in both man and animals who have been bitten by snakes from the use of a decoction of the plant made by macerating a half drachm in weight of the plant in an ounce of milk and giving the decoction to drink. He cites a few cases of cure by this treatment.

REFERENCES.—[1]*Brit. Med. Jour.*, July 28, 1900; [2]*Inter. Med. Mag.*, Sept., 1900; [3]*Therap. Gaz.*, July 15, 1900.

SPASMUS NUTANS IN INFANTS.

Henry Dwight Chapin, M.D., New York.

John Thomson[1] states that in most cases of head-shaking, or spasmus nutans, in young children, there is nystagmus. The association of this peculiar type of nystagmus with head-shaking is not without interest in connection with the etiology of that condition. Although, as has been pointed out elsewhere, rickets, deficient daylight, and general weak health are important factors in its causation, spasmus nutans in infants is, at bottom, a co-ordination neurosis. It develops during the months in which the infant is slowly learning to co-ordinate the movements of his eyes with those of his head, and it affects the muscles which have to do with these movements. Were the nystagmus which is present of the conjugate type, it would not be in keeping with the other symptoms, because the conjugate movements of the eyes are of a different order altogether from those of the head-shaking. They are not movements acquired in infancy, but are in full play when the child is born; and they are not purposive in character. Those, however, concerned in the convergent type are distinctly purposive, and are gradually acquired and perfected by practice during infancy.

REFERENCE.—[1]*Brit. Med. Jour.*, March 30, 1901.

SPINA BIFIDA. *Keith Monsarrat, F.R.C.S.E.*

PATHOLOGY AND PATHOLOGICAL ANATOMY.—The most generally-accepted classification of the different forms of this deformity is that of Recklinghausen[1]: (1,) Myelomeningocele; (2,) Meningocele; (3,) Myelocystocele.

(1,) In myelomeningocele the fluid is situated between the cord and its envelopes, but the cord itself is not normal. According to Tourneux and Martin,[2] the groove which in the early stages of development represents the spinal cord is arrested in growth, and remains open instead of incurving to form a closed tube. Accompanying this there is defective development of all the dorsal structures.

(2,) Meningocele is not common. According to Recklinghausen the dura mater is wanting entirely; others have considered the tumour a simple hernia of the membranes.

(3,) Myelocystocele is often accompanied by other deformities. The dura mater is arrested at the base of the tumour, the whole is lined internally with an epithelial layer, the representative of the ependyma of the central canal of the cord.

TREATMENT.—*Irritant Injections.*—Morton's fluid is now exclusively used for injection, and has been extensively used, especially since the Clinical Society Committee's favourable report on the method. It has, however, only a limited value. It is applicable only to cases of meningocele, and should not be used where the coverings are very thin or if ulceration is present. If these restrictions are not adhered to, it may be followed by an uncontrollable inflammatory reaction. An important point is that hydrocephalus is a somewhat frequent sequel. According to Rabaud's view, to inject a caustic substance into a spina-bifida is in all cases to inject it into a cavity in communication with the central canal of the nervous system. It is very difficult to foresee the result of these injections; they are certainly, as a rule, primarily harmless in cases of meningocele, especially if pedunculated, but such cases are also very favourable for other procedures. On the other hand, it is undeniable that a considerable proportion of cases are cured by these means.

Excision.—In a case of meningocele this is a simple procedure. With the patient lying on the side, an incision is made, commencing in the middle line above the tumour, coursing over side of the latter about mid-way between its base and apex, and terminating in the middle line below. The flap thus marked out is dissected up outwards, and includes skin and subcutaneous tissue (it is assumed here that there is enough healthy skin to form such a flap as is indicated). The sac is then opened in the line of the skin incision,

and its contents inspected. If no nervous structures are within, a second incision similar to the first is made on the opposite side, and an elliptical portion of sac and coverings removed. A redundant amount of both sac and cutaneous structures should be left. The cleft in the spinal column is now to be closed. The free edges of the sac are turned inwards so as to leave a projecting ridge in the middle line, and a continuous catgut suture from above downwards obtains a broad apposition along this line. Further support must then be obtained from the surrounding structures; that most readily available is the aponeurosis of the erector spinæ on each side, and this should be freed by lateral incisions and sutured across the middle line. The skin remains to be dealt with; by means of a quilting suture passed from side to side through the whole of the redundant flaps, a prominent ridge of tissue is made, and here again a broad apposition obtained; interrupted horse-hair sutures for the skin itself complete the operation.

When nervous structures are found in the sac they must be separated with the greatest possible care. Nicoll[3] recommends the excision of such portions as are free from nerve tissue, the rest being cut into ribbons, roughened with the knife, and replaced in the canal.

With regard to the closure of the cleft, various devices have been tried. Sljamer[4] recommends the use of a celluloid plate. Recently he showed two cases. The first was a meningocele in the lower lumbar region, and when shown had been satisfactorily cured for three years. In the second there was a lumbar spina-bifida associated with spastic paraplegia, paralysis of the bladder and rectum, and atrophy of the lower limbs; after two years healing remained sound, and although the rectal and vesical functions were not improved, the legs were considerably better.

Others have endeavoured to oppose a bony barrier by separating portions of the laminæ and periosteum, and displacing them inwards; these processes are, however, usually so defective that they can rarely be available. Thiele[5] records the case of a girl, aged nine and a half years, with lumbar meningo-myelocele at the fourth and fifth vertebræ. He took plates from the left halves of the fourth and fifth arches, fixed them over the breach, and supported them with flaps of muscle and aponeurosis, with a satisfactory result. Halban[6] records a similar procedure undertaken in a sacral spina-bifida; a flap of bone and periosteum was taken from each side-wall of the defect.

Probably treatment by excision is destined to become the method

of choice in most cases of spina-bifida How simple the procedure is, is well illustrated by three cervical cases recently reported by Nicoll.[7] All three were operated on as out-patients and nursed at home by the mothers; in each case healing by first intention took place, and the sutures were removed on the seventh day. Photographs of the patients are given, two after two months, the third after three and a half months, the results being perfectly satisfactory.

REFERENCES.—[1]*Arch. f. Path. Anat.*, Bd. cv, 1886; [2]*Jour. de l'Anat.*, Jan, 1881; [3]*Brit. Med. Jour.*, 1898, ii, p. 1,142; [4]*Wien. Med. Woch.*, No. 12, 1900; [5]*Ann. d. Russ. Chir.*, 1900, Pt. iii; [6]*Wien. klin. Woch.*, No. 6, 1899; [7]*Lancet*, March 2, 1901.

SPINE (Surgery of). *Robert Abbe, A.B., M.D., New York.*
W. Scott Schley, A.B., M.D., New York.

Horsley[1] calls renewed attention to the necessity for exact anatomical knowledge of the position of the spinal nerve-roots and cord segments in the treatment of injuries and diseases of the spinal cord. He believes that there is always danger of diagnosing the lesion too low. For instance, whereas in the cervical region the nerve-roots are about opposite the corresponding vertebral spines, in the dorsal, where the spines are longer and point downward, we shall find as we descend that the correspondence becomes further and further distant; the sixth dorsal spine corresponds with the origin of the ninth nerve-root, so that the difference is two and a half segments. The region of origin of the third lumbar nerve-roots is opposite the upper border of the laminæ of the twelfth dorsal vertebra.

The commonest cases for surgical interference are those of injury or caries of the vertebræ. In considering injuries we should divide them into recent cases and long-standing cases, and according to the locality. In acute cases with cord symptoms it is most difficult to estimate the exact degree of damage. If extreme deformity or vaso-motor paralysis exists, the cord is probably divided, and non-interference is indicated. If it can be diagnosed that there is pressure on the cord from bone or hæmorrhage without the cord (rare), we would be justified in operating at once, otherwise it would be better to wait, say, fourteen days, bearing in mind our resources of extension and fixation. The co-existence of hæmato-myelia is most important to recognise for diagnosis and prognosis. The dissociation type of anæsthesia, and, later, muscular atrophies are here present. In long-standing cases with paraplegia we must be guided by whether the cord is divided or not. Fortunately, here we are able to diagnose more nearly the exact extent of the damage.

Bennett[2] reports a case of dislocation of one of the cervical vertebræ that illustrates the value of extension in reduction and the great amount of force usually necessary to accomplish it. There were also paralysis and anæsthesia below the second rib. In two hours after reduction the patient could move both arms, and sensation had returned. Death resulted later from meningeal hæmorrhage (which was masked by other injuries), and at the autopsy the cord showed no damage, not even hæmorrhage within, demonstrating how completely function may be arrested without gross lesion.

Allingham[3] records a series of cases of laminectomy for vertebral dislocation He considers the operation always justifiable in fracture dislocation when paralysis of the body exists below the lesion. It stands in the same relation to compression of the cord as trephining does to brain compression.

Biondi[4] reports a successful case of laminectomy for dislocation of the fourth cervical vertebra, in which it was necessary to remove the arch of the fifth to effect reduction.

Lathrop,[5] in considering fracture of the spine, believes that treatment by any form of extension is liable to do more harm than merely placing the patient upon an air or water bed, the force in extension being liable to press bone fragments into the cord. Laminectomy is indicated in any case with pressure upon the cord, and in fracture of the spinous processes, laminæ, or neural arch. Lloyd[6] considers interference indicated: (1,) When cord destruction is incomplete; (2,) When the lesion is incomplete but extending; (3,) When recovery almost complete is interrupted by callus formation.

The tendency in these cases is rather towards earlier operation year by year. Many writers consider the mortality ascribed to the operation as too high, for most of the bad cases of fracture-dislocation die within a few days, and in such cases laminectomy done shortly following the injury has usually been described as the cause of death. Considerable attention to skiagraphy is universally recorded.

Starr[7] reports two cases of cord tumour successfully removed. He believes that once the diagnosis has been reached in these cases there should be no delay in operating. In one of his cases after the removal of a benign tumour (fibroma) and the spinal wound had healed, the patient succumbed to sepsis from extensive bedsores which developed while waiting to try the effect of anti-syphilitic treatment. In his collection of 145 cases of spinal tumour, with seventy-six an operation should have been feasible, and, according to the pathological report, in 75 per cent the tumours could have

been removed. These are certainly very significant figures. Lloyd,[8] in reporting a collection of fifty-one, finds that only 8 per cent of those operated upon have died as a direct result of the operation itself. Krause[9] finds that up to 1896 ten cases out of twenty died after the operation (as direct result, not mentioned), but since then there has been great improvement in mortality statistics, mostly due to better diagnosis. He reports a case, as does also F. Krause,[10] in which a tumour pressing nearly laterally upon the cord produced symptoms corresponding to the Brown-Séquard half-sided lesion.

McCosh[11] has recorded the removal of a sub-dural sarcoma pressing upon the cauda equina and extending from the eleventh dorsal vertebra to the second lumbar. Notwithstanding the quite extensive removal of the laminæ, the spine seems as strong as ever, and the patient can lift sixty pound weights above his head without any inconvenience.

Pichler[12] has reported a rare case (the third recorded) of cysticercus of the cord. There were also cysticerci in the brain and meninges. There were no symptoms mentioned referable to the spine. The cerebral meninges and brain contained numerous vesicles of different sizes and stages, and the pons contained two small ones. In the cord at the level of the eleventh dorsal vertebra there was a cysticercus in the posterior columns, and at the first lumbar another in the right posterior quadrant. The presence of dementia and epilepsy may have masked any spinal symptoms.

A moderate number of cases of spinal tuberculosis have been operated upon in the past year. It has been restricted, in America at least, chiefly to those cases of Pott's affecting the posterior portion of the spine, and when other treatment has failed, and is considered contra-indicated where there are tubercular lesions elsewhere, or where there is advanced sepsis, and in the presence of complete cord degeneration (myelitis, etc.).

Lloyd[13] has made a collection of 154 cases, including fifteen he has had himself since 1892, of which two were successful. There were no deaths from the operation. He considers that the operation is seldom necessary, but that there are certain cases which call for the procedure and are benefited. Horsley[14] believes that its performance in cases above thirty years of age is dangerous, and that it is contra-indicated in the presence of myelitis, which he believes is due in spinal tuberculosis to occlusion of the vessels from a non-tubercular pachymeningitis secondary to the extra dural tubercular inflammation. The presence of analgesia and symptoms as indicative of myelitis do not, however, contra-indicate operation in a child, as

that condition is largely recoverable from in children. The proper course in caries of the spine, with paraplegia, is, first, rest in bed with extension. If no symptoms of myelitis or abscess formation develop, we should wait for six months before deciding that such measures are hopeless. If there is any indication of abscess, we ought to interfere. The presence of much contracture and spasticity, with exaggeration of deep reflexes, he considers enough to afford a clear indication, particularly if there is a rise of temperature. Laminectomy with the removal of *all* perithecal thickening is very necessary. In dealing with the abscess we determine carefully its position, bony limits, and extent with the probe, so that it can be safely scraped and emptied completely. It is most important to remove any sequestrum and get entirely rid of the abscess to do any good, and the patient should be kept in bed for quite four months following the operation. Further details for after-treatment are not given.

The several mortalities that have followed the operation of forcible correction of the spinal deformity in Pott's disease, with the frequent relapses, have diminished its popularity. Goldthwaite,[15] the author of the hyperextension frame, finds that as the result of the work of the last two years he would hesitate to correct any spinal deformity resulting from tuberculosis unless it was associated with a paraplegia that had resisted other methods of treatment. The operation is generally considered applicable to those cases of caries with paraplegia where there is no bony ankylosis, abscess, or cord destruction, and where other methods have failed.

Marshall[16] records another of the ingenious methods that are ever being devised for the treatment of spina bifida. While the child lies with its head down and buttocks elevated, he punctures the sac, letting off the fluid slowly. When empty, he dissects it up on either side as far as the spine, turns it in, and applies Lembert sutures. Skin and fascia are sutured over this, and collodion dressing completes the operation. He emphasises the formation of the "inner pad and flange" and the position of the patient during and after the operation.

Henneman[17] reports a case cured by the injection of **Lugol's Solution.** Villemin[18] has also used an ingenious method of injecting **Iodised Liquid Vaseline** (1 in 1,000). With the child in the prone position the vaseline floats to the top and obviates the danger of entering the dural space. Repeated injections converted a sac of some size into a compact mass.

Torticollis.—Horsley[19] has delivered a clinical lecture upon this subject, and has outlined the ground so well that a brief *resumé*

seems worthy of place. He contends that the term should be understood as a symptom only, and we should endeavour, as the foundation of our diagnosis, to divide the disease conditions according to the part of the nervous system attacked. He finds the cortex cerebri, the corona radiata, cerebellum, the spinal centres of origin of the spinal accessory, and the first four cervical nerves, capable of being excited by direct means, *i.e.*, inflammations, growths, or poisons circulating in the blood; or indirect means, by the afferent roots of cervical nerves involved in diseased conditions and causing reflex action and central excitation. The spasms may be tonic or clonic. The possible positions of the head are: (1,) Neck flexed, chin bent forward, and spasms frequently clonic; (2,) Deviation of the head to the side, chin pointing to shoulder (vertical axis of head parallel to that of body); (3,) Turning of the head to one side and tilting of occiput backwards, elevating the chin; (4,) Lateral flexion of neck with protrusion of chin to opposite side; (5,) Tonic or clonic spasms drawing the head backwards. Dr. Risien Russel having recently determined, through a series of experiments upon monkeys, the muscles and movements involved, we are able to say that the first variety is caused by the longus colli and sterno-mastoids in part; the second, a very complex and highly coördinated movement and an instance of the correlation of muscles *on opposite sides* of the body, is caused by the sterno-mastoid on one side, and splenius and other muscles on the other (acting in conjunction); the third is produced by muscles contracting on one side of the neck only, these are supplied by first and second cervical nerves on one side; the fourth, a rarer form, could be produced by stimulation of the cortex at a point near the marginal gyrus; the fifth, a very rare form, is produced apparently by spasm of all the muscles on the dorsal surface of the vertebral column with the possible exception of the trapezius. The cervical roots are arranged in pairs, *i.e.*, first and second, third and fourth, and the uppermost pair has most to do with lateral movement of the head in torticollis. Excitation of the remaining cervical nerves produces more a drawing of the head and neck backwards, becoming more indirect as we descend towards the dorsal nerves.

Horsley reiterates the necessity for remembering the fact that each muscle is practically supplied by two roots. From the above varieties of the disease he says, "it is plain that the cortex cerebri is for the first three. The fourth and fifth varieties may be derived from the spinal centres, or even, especially in the latter case, the cerebellum." The possibility of this exists, but there is no real evidence to show that these lower centres can cause the continuous

or clonic spasm without a lesion exaggerating the functional activity of the cortical and higher centres. The experimentation of the last ten years shows that excitation of the cortex produces a combination of tonic and clonic spasms; while excitation of lower centres (cerebellum and cord) usually produces tonic contracture. These facts may prove of value in localising the origin of the spasms. It is then necessary to see whether it is caused by organic disease of the centres or nerves, or whether it is only a functional spasm. The latter is usually accompanied by other well-known symptoms of neurosis — neurasthenic features, insomnia, nervous irritability, etc. Furthermore, this functional spasm is essentially a clonic one. How far the condition can be or is at all produced by trouble in the peripheral nervous system is uncertain. Several cases are mentioned where torticollis followed injury to the neck. Torticollis in caries of the spine, however, is probably more due to an attempt to relax pressure upon inflamed joints than to nerve involvements, because when the atlas and axis are affected it does not exist, though the nerve roots must be to a certain extent involved. Fortunately, there are comparatively few nerves involved in the question; the spinal accessory and the posterior divisions of the first five cervical nerves.

The treatment of torticollis heretofore has not been very satisfactory, undoubtedly because of the difficulty in locating the seat and nature of the mischief. The functional or hysterical cases are best treated by the **Rest Cure**. The removal of organic disease, if possible, would mean the removal of the excitation.* This is seldom possible, and we are obliged to treat the disease symptomatically by paralysing or throwing the muscles out of action. This is more commonly done by **Nerve Section.** It is usually necessary to divide the spinal accessory, and in severe cases the co-operating muscles of the opposite side. The latter, Horsley thinks, is best done by the Gardiner-Keen operation. The primary branches of the first four cervical nerves are looked for. Gardiner and Horsley have removed the posterior branches of the first three with no disadvantage so far as preserving the normal position of the head and horizontal plane of the visual axes is concerned. The scaleni are occasionally involved, and some spasm may be left. Omohyoid and levator anguli scapulæ spasms have been observed. The spasm in supplementary muscles should be accurately determined before operation.

In this connection the paper by Bailey,[20] calling attention to the variability of the symptoms in paralysis of the spinal accessory nerve,

* Case recorded cured by anti-syphilitic treatment.

is important. Occasionally the total innervation of the trapezius is through it. He mentions two cases in which great disability resulted from accidental section. Leszynsky[21] mentioned a case in which, after removal of an inch of the nerve, the functions of the muscles remained normal. Booth[22] mentioned a case in which the sterno-mastoid and part of the trapezius had been paralysed. Ordinarily disability is only partial.

An immense deal of literature has appeared upon the subject of spinal anæsthesia during the year. (See article "Anæsthesia").

REFERENCES.—[1]*Clin. Lect. Med. Pub. Co., London*; [2]*Lancet*, April, 1901; [3]*Ibid.*, May, 1901; [4]*Brit. Med. Jour.*, June, 1901; [5]*Ann. Surg.*, Dec., 1900; [6]*Jour. Amer. Med. Assoc.*, April, 1901; [7]*Jour. Ment. and Nerv. Dis.*, March, 1901; [8]*Jour. Amer. Med. Assoc.*, April, 1901; [9]*Ref. Therap. Gaz.*, Aug., 1901; [10]*Brit. Med. Jour.*, Aug., 1901; [11]*Ann. Surg.*, Jan., 1901; [12]*Ref. Amer. Jour. Med. Sci.*, Nov., 1900, from *Prag. Med. Woch.*; [13]*Jour. Amer. Med. Assoc.*, April, 1901; [14]*Clin. Lect. Med. Pub. Co., London*; [15]Report in *Boston Med. and Surg. Jour.*, June, 1900; [16]*Brit. Med. Jour.*, June, 1901; [17]*Ref. Phil. Med. Jour.*, Jan., 1901, from *Munch. Med. Woch.*; [18]*New York Med. Jour.*, Aug., 1900,; [19]*Med. Pub. Co., London*; [20]Report in *Med. Rec.*, March, 1901; [21]*Ibid.*; [22]*Ibid.*

SPINE (Lateral Curvature of). *Richard Barwell, F.R.C.S.*

For many years, or rather for centuries, lateral curvature of the spine has been considered as originating in the column itself or in the muscles moving it.* The very name of the deformity led the mind to regard it as "of the spine." Hence it was the habit in examining patients to investigate only the back—only the parts from the level of the crissa ilii upwards. To this custom must be attributed the long epoch during which that which I hold to be the true etiology of the malformity has been unrevealed. To myself, looking back, it seems extraordinary that I did not earlier find the clue, for already in 1868 I pointed out that a certain position of the pelvis (obliquity) is always followed by a spinal curve. Nevertheless, I did not suspect that other postures of that bone (or group of bones) are prevalent and produce like results; for, save that I searched for the above defect, I continued to examine my patients in the time-honoured but inefficient method, until the behaviour of my recently-invented scoliometer aroused my suspicions, and soon afterwards I found that

*I believe myself to be the first to have shown that the impassive bones of the column could not, independent of muscular action, place themselves in false position unless disease, causing loss of substance, had altered their form.

two other postural faults of the pelvis are even more common than obliquity, and are likewise productive of scoliosis. My names for the three conditions are *obliquity*, *version*, and *amesiality*.

Obliquity may be due to undue brevity of one lower limb, or to a faulty position. Hardly is it necessary to reproduce here illustration of the former of these; every practising surgeon knows how, when a limb is shortened by hip-disease, by other osseous malady, or simply from deficient growth, that side of the pelvis lies lower than the other, which connotes that the vertebral column cannot stand upon it vertically and in a straight line; the body must, by bending the spine laterally, sway over to that side on which the pelvis is highest. The same result follows an obliquity produced, not by inequality in the length of limbs, but simply by a habit. No one stands for any length of time and as a custom with both knees straight and the weight equally distributed on both feet, but with the weight on one foot and with the other knee more or less bent, while on the side of this flexed limb the pelvis droops. Of this no evil comes provided the two limbs be at different times equally employed. But there are people, more especially girls, who thus use one limb to the virtual exclusion of the other, and many add to this fault a twist of what may be called the unemployed hip-joint, so as to bring that knee in front of the supporting one. Subjoined is a diagram of the position (*Plate XVIII, Fig. A*); the resultant evil (setting aside bodily constitution and health) is commensurate with the persistency of posture.* But these two varieties of pelvic malposture were described by me more than thirty years ago. The extension of the same line of investigation into different, though analogous conditions, is the more immediate subject of the moment.

Fig. B, Plate XVIII, is an instance of a condition I have ventured to call *version*, that is to say, a twist of the pelvis in such wise that one side lies behind the other. It is a very common malposture. Of course, the sacrum is turned upon its long axis, and with it is twisted the immediately superposed vertebræ.†

Fig. C represents *amesiality*, that is to say, the patient does not stand with the lower limbs vertical, or rather with the mid parts of the pelvis perpendicular over the interval between the feet, but the two limbs slope to one or the other side; therefore, that which should

* In some cases this position is due to unilateral ovaralgia.

† The very obliquely shaped lower surface of the fifth lumbar vertebra prevents any rotation of that bone on the sacrum, with which it must of necessity turn.

PLATE XVIII.

LATERAL CURVATURE OF SPINE.

Fig. A.

Fig. B

Fig. C.

be the mid line of the pelvis is not mesial, hence the name. The condition will be more comprehensible when the photographs, as will now be done, are more directly referred to.

Neither of the last two faulty postures of the pelvis can be detected with sufficient certainty unless the back view of the whole figure be exposed, and, even so, absolute surety cannot be attained unless by measurement on a photographic image. In a well-arranged room unpleasant exposure can easily be avoided. But that measurement on the picture shall give reliable results, two things are absolutely essential: Firstly, a horizontal line whence a true vertical can be drawn for the detection of amesiality, and that the camera be mathematically straight behind the centre of that line to verify version. The arrangement is as follows: A piece of white tape about 5 feet long is secured to the floor at each end by carpet pins, which at the same time fasten down the ends of a piece of string having in the middle a knot; another pin is pricked into the floor at the middle of the tape. The camera must be so placed that the knot, *i.e.*, the apex of an isosceles triangle whereof the tape is the base, falls on the centre of the lens, and the picture must be exactly in the middle of the ground glass. Having completed these preparations and shewn the patient how she is to stand, I leave the room until she, undressed, has taken up the explained position, with the heels at the edge of the tape and equidistant from the central pin. Then being summoned, I enter by a door at the back of the patient, take the picture, and make exit by the same door. In due course, when the prints are ready, the measurements are taken. Let *Fig. C*, *Plate XVIII*, be first considered. The tape, whose arrangement on the floor has just been explained, has marked in white the true horizontal, and midway between the heels a dark mark indicates the spot where, if the figure were straight, a vertical line passing through the rima natium should fall. Now a steel square should be so placed that one arm corresponds accurately with this white line and the angle with the dark spot; the other arm running upward on the picture, and along this a pencil mark should be drawn.* If this mark fall to one side of the intergluteal fissure and *a fortiore* also upon one of the thighs, the pelvis is amesial.

A careful examination of *Fig. B*, even without measurement, shows

* In consequence of spherical aberration the white line is not absolutely straight; for perfectly correct measurement a steel ruler should be so placed on this line that its two ends correspond with the straight edge, and the one arm of the square be pressed upon it.

that the right side of the pelvis looks broader than the left; so also the post-trochanteric fossa on the former side, broad and little marked by shadow, is on the latter narrower (foreshortened) and considerably shaded. By measuring with compasses, from about the centre of the rima natium to the side outlines, a difference of about $\frac{1}{16}$ inch will be found; this difference, multiplied by 16 (the pictures are $\frac{1}{16}$ the size of the model), indicates very considerable version of the pelvis.

In the above description of these mal-positions attention has been drawn to the pelvis; it will be well, therefore, to point out that this part of the skeleton is a group of bones, whereof the primordial part is the sacrum, the two ossa innominata being mere outstanding processes. But the sacrum is a part of the spine, and at the same time the basis on which the other twenty-four bones of the column rest. It is impossible that this should assume a constant faulty position without involving the rest of the structure. When in version it twists, the vertebræ immediately above must follow the movement, as also do those lying still higher, indeed, the whole spine, until a certain intensity of rotation is reached, when their excursis becomes compensatory, *i.e.*, they rotate in the contrary direction. This accounts for a frequently noticed phenomenon, that a total simple curve occasionally becomes double or S-shaped with great rapidity; even suddenly. Neither can the base (sacrum) of the column shift to one side, as in amesiality, without calling forth, by the necessity of balance, curves in other regions of the spine.

There are but one or two points more to which attention should be drawn, *viz.*, to the manner in which these faulty postures are, as I believe, usually acquired, that is to say, in bad habits of sitting. The undoubted increase of scoliosis during the last ten or more years appears to me due to the prevalent plan of education carried on chiefly by writing. When on any patient version is found, or even suspected, a chair may be placed behind her, and she may be directed to sit down without looking round or moving the feet. If the garments have been removed to the level of the hips, one side of the pelvis will be seen to lie farther back in comparison to the other than while erect. The knees may be taken as indices, when one will be found much in advance of the other; for this method no undressing is necessary; a straight edge about $2\frac{1}{2}$ feet long placed on the ligamenta patellæ will lie in a very slanting direction. The patient sitting thus while studying, and more especially while writing, will twist the shoulders and chest so that they lie parallel to the edge of the table, hence, at all events in part, the compensatory twist above mentioned.

Amesiality is due to a different fault in sitting. If those inclined to be thus affected are directed to sit at a table and write, it will be found that they sit almost exclusively on one tuber ischii; indeed, in many cases the surgeon may easily pass his open hand under the unused one, the weight falling entirely on the other. These postures indulged in for several (often for many) hours daily are not abrogated in the erect posture. Were it possible to superintend the position of every pupil in class or during home-work, scoliosis would be far less frequent.

Very often in a scoliotic figure both version and amesiality are present, indeed, it is not uncommon to find all three malpostures combined; but whether only one, two, or three are present, a great and essential part of the treatment must be directed to eliminating these faults. When they are recent and as yet the resultant curvature slight, such correction suffices to cure the nascent deformity; much, of course, will depend upon the docility and common sense of the patient in carrying out the directions. Further advanced cases require surgical treatment. For the muscles and ligaments on the concave side of the curve rapidly become shortened and adapted to the abnormal position; indeed, combined with this contracture is a gradual shifting of the latter structures, especially of the anterior common ligament, into the hollow of the curve. These shortened parts must be stretched, but the application of sudden force, as for contracture of joints, is inapplicable, and I have failed to find any account of so efficacious and painless a method as that which I have introduced under the name of rachilysis.

SPLEEN (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

After a review of the subject, Warren[1] describes four cases of removal:—

(1,) A man, aged twenty-six, who had not had malaria, had an enlarged spleen with some anæmia, hæmoglobin 65 per cent., corpuscles not much altered. The enlarged spleen was very adherent, but was safely removed, and the patient recovered health. The spleen weighed 1,115 grms., measured 21×16×8 cm., and appeared simply hypertrophied.

(2,) A man, aged thirty-six, who had had malaria ten years before, suffered from an enlarged spleen and some anæmia, hæmoglobin 60 per cent., but the corpuscles not altered. The tumour was removed with some of the pancreas, but part of the spleen attached to the stomach was left. The hæmorrhage from the adhesions could not be well controlled; there was recurrent hæmorrhage,

streptococcic peritonitis, and pleurisy, with death on the sixth day. A small round-celled sarcoma the size of two fists occupied part of the spleen.

(3,) A woman, aged thirty-four, who had had an increasing tumour for some months, was explored and the much enlarged spleen carefully removed without loss of blood, in spite of the number and thinness of the vessels. She recovered. The blood taken at the time of the operation showed a large increase of white cells. The spleen, which weighed 2,275 grms., was simply hypertrophied. After recovery the patient's blood was found less leukæmic as compared with that taken at the operation.

(4,) A man, of twenty-six, had an enlarged and impacted spleen following thrombosis of the splenic vein, perhaps caused by torsion of a moveable spleen. This spontaneously ruptured, and he was operated upon for a supposed gastric perforation. The blood was cleared away and the spleen removed, but the patient died on the fourth day.

D'Arcy Power[2] removed an enlarged and displaced spleen in a woman, aged forty-five. Recovery was complicated by the development of an abscess below the diaphragm, probably due to the breaking down of clot, but it was in the end good.

Hydatid of the Spleen.—In 1898 Quenu[3] operated on and removed a hydatid cyst of the spleen, afterwards plugging the sac. In June, 1900, there was a tumour in the scar consisting of a row of hydatid cysts, *i.e.*, a number of daughter cysts which had been inoculated into and had grown in the line of the scar.

References.—[1]*Ann. of Surg.*, May, 1901, p. 513; [2]*Brit. Med. Jour.*, Nov. 17, 1900, ii, p. 1,428; [3]*Cent. f. Chir.*, 1901, p. 120.

STERILITY. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

It is a too common assumption that in cases of sterility the fault is on the side of the woman. In 250 cases of which notes are given by Brothers,[1] information concerning the condition of the husband was obtained in seventy-two instances, with the result that fifty of them were shown to be responsible for the sterility of their wives. The cases in which the condition of the man was enquired into were those in which no cause of sterility was found in the woman. In twelve cases nothing abnormal could be found in either husband or wife. Thus of all the cases of sterility, one in every five was attributable to the husband. This is a point to be borne in mind when the practitioner is consulted for this cause, for otherwise minor operations, such as dilatation and curetting, may be performed unnecessarily. Brothers records that fourteen women had been

treated by sounds, dilators, pessaries, etc., when the semen of the husband did not contain a single spermatozoön.

In 180 cases the woman was considered responsible for the sterility, and among them the causes were classified as follows :—

	Cases.		Cases.
General Conditions :		Stenosis of cervical canal	22
Obesity	7	Undeveloped uterus ...	14
Alcohol & morphine habit	1	Retrodisplaced uterus ...	22
	8	Anteflexed or anteverted uterus	7
Pelvic Peritoneum :		Prolapsus uteri	2
Pelvic abscess	1	Fibroids	5
Pelvic tumour	3	Endometritis and endo-cervicitis	15
Pelvic peritonitis... ...	14		— 93
	— 18	*Vulva and Vagina :*	
Adnexa :		Unruptured hymen ...	1
Undeveloped ovaries ...	6	Vaginal bands	1
Ovarian tumour	9	Vaginismus	3
Salpingo-oöphoritis ...	28	Gonorrhœal vaginitis ..	6
Pyosalpinx	7		— 11
	— 50		
Cervix and Uterus :			
Pin-hole os	5		
Conical cervix	1	Total	180

The author points out that 62 per cent. of these cases can be dealt with by palliative measures, general treatment, or minor gynæcological procedures ; 35 per cent. require graver treatment in the form of major operations ; whilst in about 3 per cent. no treatment is needed or available. In seventy cases Brothers was able to trace the results of treatment, and of these 12 per cent. became pregnant. The prognosis is naturally best in the cases where general treatment and minor procedures are indicated ; but it is wise in every case to not hold out too definite a prospect of cure of the sterility ; the rectification of the abnormal condition is all that can be guaranteed.

REFERENCE.—[1]*Post. Grad.*, Feb., 1901.

STOMACH (Diagnosis of Cancer of). *R. Hutchison, M.D.*

Boardman Reed[1] states that when the tumour is palpable this can be made without difficulty. The unevenness of the growth, its mobility, the more or less constant pain, cachexia, anorexia, vomiting, blood in the vomited matter or fæces, and the general and rapid emaciation, all are characteristic symptoms. In the early and, from point of view of operation, hopeful stage of the disease, the diagnosis is more difficult, but more necessary. One should be suspicious of every dyspepsia in elderly patients which does not improve under simple treatment, and in which there is persistent absence of free HCl. and diminished gastric motility.

Nests of cancer cells, or signs of cellular proliferation, may be sought for in the washings of the stomach, but blood examination is inconclusive. Carcinoma which has developed in an ulcer can be distinguished from simple ulcer by the supervention of cachexia and a change in the character of the pain, from a paroxysmal to a more or less constant form. In such cases HCl. is very likely to persist.[2] Chronic asthenic gastritis is distinguished by being rarely painful, and then, as a rule, only during digestion, and there is no blood in the vomit. Improvement under treatment is the rule in such cases.

Atrophy is difficult to distinguish from carcinoma, as HCl. may be absent in both, and atrophy is often painful. But the pain here is usually digestive, and the tongue is clean and the washings of the stomach free from mucus—the reverse of the conditions which obtain in carcinoma.

The nervous forms of dyspepsia should not be confused with carcinoma, as they are generally improved by tonics and generous feeding.

Benign pyloric stricture, with dilatation, is to be distinguished from malignant stricture by the character of the pain, which is constant, dull and gnawing in the latter, paroxysmal and colic-like in the former.

Hemmeter,[3] in dealing with the same subject, says that it seemed reasonable that an early diagnosis was extremely difficult to reach, chiefly because, as yet, we knew nothing of the causative factor in neoplastic growth. In 99 per cent of cases of cancer of the stomach which had been operated on, the patients died of recurrence. In the 1 per cent saved, an early diagnosis was made, that is to say, the cancer was discovered before subjective symptoms of gastric neoplasm had become evident. There was a period of three months—the incipient stage of the cancer—which was usually diagnosed as nervous dyspepsia or as chronic gastritis. These were very vital moments. If the case refused to yield to good medical treatment, despite the absence of any subjective carcinomatous symptoms, early recourse should be had to the clinical tests. These he discussed as follows: Absence of hydrochloric acid was valuable; but in those neoplasms derived from ulceration it was very generally present. Lactic acid was simply a sign of stagnation, and was due to carbohydrate fermentation. The Oppler-Boas bacillus was present in 53 per cent of the cases. It was about as valuable as lactic acid due to stagnation. In regard to tumours, three-quarters of them were not palpable. The X-ray test was futile. As to the gastroscope, German reports gave little hope. Gastric curettage was the very

latest method of procedure. It was practised with a weighted soft-rubber tube, run in and out. There was no hope of seeing carcinomatous architecture, but the cell nuclei revealed certain changes now thought to be constant and characteristic. Mitosis was found to be irregular, one important feature being that the chromosomes were not equally divided between the poles. If found, this was extremely suggestive. The future treatment of gastric carcinoma would not be surgical; when the knowledge of carcinoma advanced, it would be along the lines of the biology and chemistry of the neoplastic cells, and ultimately, surgery would be discarded for a more scientific mode of treatment.

REFERENCES.—[1]*Inter. Med. Mag.*, July, 1900; [2]Macfarlane, *New York Med. Jour.*, Aug. 25, 1900; [3]Abstract in *Med. Rec.*, May 19, 1900.

STOMACH (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Perforated Gastric Ulcer.—The results of operations show a striking improvement, owing to the promptness with which suture is undertaken. Thus, Wilson[1] records three gastric and also one duodenal perforation, all sutured with a successful result. Hume[2] had operated upon eleven cases. Of the first six only one recovered; of the last five all got well. According to Finney,[3] of the most recent cases then published, *viz.*, twenty-one in the earlier part of 1900, there were thirteen recoveries and eight deaths, a mortality of 38 per cent. The successes noted in the most recent statistics therefore show the possibilities within reach of the earliest surgical measures.

Gastric Ulceration Causing Profuse Hæmorrhage: Gastrorrhagia. It is generally agreed that the fulminating type, where profuse hæmorrhage starts from an ulcer for the first time and rapidly leads to death, is at once rare and beyond surgical aid. It is also very rarely that a surgeon can interfere advantageously immediately after the occurrence of a hæmorrhage, on account of the anæmic and exhausted condition of the patient, and because, under careful medical treatment, further bleeding need not be anticipated for some weeks until the patient's blood tension has recovered. That it is reasonable to do so sometimes, and can be successful, is illustrated by Case V of Mayo Robson's,[4] in which the bleeding was still going on, and Afleck and Gairdner, in the discussion, quoted cases which had slowly bled to death. Yet Rodman's[5] statistics, in which among thirty-two operations for acute gastrorrhagia there were thirteen deaths, or a mortality of 40 per cent, show that the operation is dangerous. The most satisfactory measure is to operate in the interval. An

operation should be recommended after the second severe hæmorrhage has occurred, or when smaller hæmorrhages have recurred at frequent intervals. Gastro-enterostomy is the operation which has been the more completely successful; it is the most rapidly performed, and has this overwhelming merit, that it removes, by draining the stomach, the cause of the continuous ulceration, which then soon heals. Even when recourse has been had to other measures, the case has not been cured until gastro-jejunostomy has been also performed. Case II, recorded by Andrews and Eisendrath,[6] was treated by gastrotomy and ligature of the ulcer *en masse*. No further hæmorrhage took place, but the patient suffered from gastralgia and dilated stomach, and did not improve, so that seven months later gastro-enterostomy had to be performed, but he did not survive this operation.

In a case of mine,[7] who suffered from severe recurrent hæmorrhage, I ligatured the vessels at the base of an ulcer on the anterior wall, and afterwards invaginated it. All went well for a year, then she had another most profuse hæmorrhage. As soon as she had recovered a little I explored, and found a much more extensive ulceration of the pyloric third of the stomach; gastro-jejunostomy was done, and she has now been well for two years. The deficiency in the first operation was in not preventing the continuance of the ulceration. Instead of gastro-jejunostomy, pyloroplasty may suffice. An unmarried woman, aged forty-four, had had severe attacks for twenty years, and had become wasted and anæmic, and I could find no sign of ulceration, only pyloric constriction with dilatation of the stomach, covered by large veins causing the venous congestion. Pyloroplasty was done, and I saw her recently, two years after the operation, perfectly well and quite fat. Hence, it may be doubted whether it is necessary to explore the interior of the stomach. Certainly this may be dispensed with in a weak patient. The ulcer cannot always be found, or may be very extensive or multiple. Manipulations may set up bleeding which had previously ceased. The application of the cautery leaves an eschar which, when it sloughs away, may give rise to fresh hæmorrhage. The plan most frequently employed has been to draw forward the ulcer and apply a ligature *en masse*, but care must be taken not to include all the wall of the stomach, lest a perforation follow. Even after this it is better to follow Mayo Robson's advice and make a gastro-jejunostomy.

Hæmatemesis after Operation.—Additional cases to those mentioned by Mayo Robson[8] have been recorded by Chapman,[9] in which there was no lesion discovered. Reichard and Schmidt[10] saw fatal

parenchymatous hæmorrhages after gall-bladder operations, as did also Winslow.[11] It appears to be a vaso-motor paralysis of the splanchnic vessels. I was recently called to a case dying of it, who had been suffering from obstinate constipation. Lauenstein and Dehler[12] saw it arising thirteen days after operation for incarcerated umbilical epiplocele, and after a gall-bladder operation. In both a large amount of omentum had been removed Both fortunately recovered. Dieulafoy has referred to it as "black vomit," occurring late in fatal cases of appendicitis.

Hour-glass Stomach.—Upon this subject, which includes many controversial points, Moynihan[13] gives a full *resumé* with a table of all cases operated upon, including six of his own. As to the origin, he has good reason to think that many have been termed congenital from the supposed absence of ulceration after a too superficial examination, and believes that the condition is the result of ulceration and contraction in most cases: (1,) By perigastric adhesions, a cord being found running down from the liver and sharply pressing into the anterior wall of the stomach; (2,) As a result of ulceration and perforation, the stomach becomes fixed to the anterior abdominal wall; (3,) A circular ulceration extends transversely to the long axis of the stomach, and gradually contraction follows to such an extreme degree that it may reduce the communication between the cardiac and pyloric sacs to an orifice admitting only a No. 4 or No. 5 catheter. It is generally situated rather on the pyloric side of the middle of the stomach; (4,) Cancer, either implanted upon a chronic ulcer or a diffuse growth, spreads gradually until it includes the whole of the stomach. Generally the diagnosis has been made of dilatation of the stomach following upon a chronic ulcer, but sometimes the special signs of the two cavities with the fluid flowing from one to the other have been noted, with the separate "paradoxical" dilatation of each sac. The fluid introduced seems to disappear, and not immediately to return, but when it does return from the pyloric sac the decomposing contents come with a rush, and gurgling is heard as the fluid flows from one cavity to the other. Gastroplasty, gastro-gastrostomy, or gastric anastomosis, gastro-enterostomy, and partial gastrectomy with end-to-end union, especially in cancer cases, have all been successfully adopted. Partial gastrectomy appears to be the best operation in suitable cases, and gastro-enterostomy the least successful, unless, indeed, a communication be made with both the pyloric and cardiac sacs.

Foreign Bodies, Needle, Fish-bone, in the Wall of the Stomach.—Langman[14] reports a case of a young woman, aged twenty-one, who

had many hysterical symptoms and took morphine, but for two years had had attacks of vomiting and hæmatemesis, and sometimes she vomited fæces. Indigo, given as an enema, was found in the vomit. A darning needle was discovered impacted between the serous and mucous coats. Some of the hysterical symptoms, including the stercoraceous vomiting, persisted. I have described the case of a woman who was found to have the pyloric end of the stomach pinned to the back of the abdominal wall by a fish-bone $2\frac{1}{2}$ inches long and of the size of a stout needle. The patient had been attacked suddenly by severe pyloric spasm, and a lump formed which led to the exploration. The thickened wall around the foreign body was excised, and the patient perfectly recovered. Nothing was learnt in either case as to when the foreign body was swallowed, or anything to suggest such. Hence, the X-rays were not used.

Stomach (Cancer of): Diagnosis.—A consideration of the latest Registrar General's Report for England and Wales shows the terrible incidence of this disease :—

Males.		Females.	
Population - -	15,380,573	Population - -	16,362,015
Deaths from cancer	10,337	Deaths from cancer	15,988
Deaths from cancer of stomach -	2,114	Death from cancer of stomach -	2,120
i.e., 20 per cent of all the males dying of cancer.		*ie.*, 13 per cent. of all females dying of cancer.	

Not only has medical treatment no means of checking the growth, but the amount of relief afforded is very slight.

The only possible success is by an early recourse to surgery. However unsatisfying, yet the results are steadily improving towards a high-water mark of 50 per cent. of lives prolonged to three years or more, with a very small mortality following the operation in well-selected cases. But the great difficulty lies in the early diagnosis. In the making of this stress is laid upon a number of signs and symptoms which become prominent only when the time for a successful excision has passed.[15] The persistence and increase of a palpable tumour should lead to exploration, because, if not cancer, there are other surgical measures which can be successfully undertaken. The earlier symptoms of cancer are of the greatest importance. Hartmann and Silhol[16] lay stress upon an examination of the blood. There is a marked diminution in the hæmoglobin, but not in the number of red blood corpuscles, which in pernicious anæmia are greatly reduced. The red corpuscles present irregularities and inequalities in size. If there is leucocytosis, there should be a marked increase of the mononucleated cells. Hemmeter[17] remarks on the

important diminution in the amount of hydrochloric acid, the presence of lactic acid, the diminution in the activity of the gastric juice upon albumen, all especially marked when the fundus is affected. When the pylorus is first affected, there is early gastric stasis with obstructive vomiting, with marked pain. These features co-existing, even when no palpable tumour can be detected, should lead to exploration. Such signs as marked wasting, hæmorrhages, pieces of the growth or special organisms in the vomit, all appear usually when the time for successful surgical measures has passed. (See also p. 549.)

Cancer following Chronic Ulceration of the Stomach.—That cancer supervened on chronic ulceration was formerly disregarded, by some definitely discountenanced. But more careful attention to clinical histories shows that long-continued chronic ulceration and dyspepsia is an important factor in the causation of cancer. Rydygier[18] considers it of such importance, that even in cases of chronic ulceration and pyloric stenosis, where there is yet no positive proof that cancer has commenced, he would adopt excision in preference to gastro-enterostomy. It is especially mentioned in Boeckel's case (p. 556) that the malignant disease had supervened upon an old ulcer. A number of other instances of this occurrence is given by Curtis.[19]

Gastrectomy (Partial or Complete).—The results of this operation have been improved by undertaking it at an earlier stage and by excising more freely, allowing a wide margin beyond the growth. Indeed, it is unadvisable to undertake excision unless an inch or so of apparently healthy stomach can be included, for if this is not done recurrence is almost inevitable within the year, and gastro-enterostomy gives much longer relief in such a case.

End-to-end union following Billroth's first method gives the best results; failing this, both ends are closed, and a lateral anastomosis, gastro-jejunostomy, succeeds best.

According to Schuchardt, the surgeon encounters cancer in three forms: (1,) An essentially ulcerating variety with surrounding infiltration, tending rapidly to glandular invasion; (2,) An infiltrating variety with little ulceration, causing a widespread, leathery stiffening of the wall with shrinkage in places; (3,) A true tumour, well localised, sessile or pedunculated.

Total Gastrectomy.—Avon Bardleben[20] operated on a woman, aged fifty-two, who had had symptoms for one year, had lost 40 lbs. in weight, and presented a moveable tumour the size of the fist. It proved to be a colloid carcinoma without glandular enlargement. The whole stomach, with a little of the œsophagus and duodenum

at either end, was removed. The duodenum was then closed and the œsophagus connected with the jejunum. After the third day all food was taken by the mouth, and after getting up she gained 13 lbs. in weight.

Boeckel[21] reports another case in a woman, aged thirty-eight, the malignant disease having supervened upon an old ulcer. This was followed by recovery and great improvement in health.

Delatour[22] removed nearly the whole of a stomach affected by adeno-carcinoma from a woman, aged twenty-six, who had suffered from local pain, vomiting and great wasting. A year and a half later she was in excellent health and in the seventh month of pregnancy.

Partial Gastrectomy.—Kammerer[23] reports two cases, one in a man aged thirty-one and another aged forty-five, in which extensive resection was followed by a good recovery; but three other cases were fatal.

Brunner,[24] referring to forty-seven cases of cancer of the stomach, found fifteen inoperable, in ten of which the diagnosis was confirmed *post mortem.* Twelve were explored only, being deemed too advanced for resection, and other operative interference unnecessary; ten were treated by gastro-jejunostomy, one by jejunostomy, and two by gastrostomy. Of the eight resected cases, one showed no signs two and a half years after operation; another was well and free three months after the operation. The others died, two in hospital of peritonitis, two of recurrence at the end of a year, and two six months after removal.

Localised Tumours (Polypi).—Wilson[25] removed successfully a tumour ½ lb. in weight situated on the great curvature, and extending into the duodenum. He first reported the tumour as a sarcoma, and then corrected this to carcinoma. Herhold[26] found a malignant polypus the size of a fist with the stomach tightly contracted round the tumour. It was attached by a broad base to the anterior wall, a portion of which was also excised. The patient rapidly gained 40 lbs., and four months later was at work. Von Hacker[27] removed a myxoma from much the same position. The woman, aged twenty-six, was well twenty-two months later, and had married.

Swain[28] excised a fibro-myxomatous polypus the size of a large egg which was attached close to the pylorus, and had prolapsed into the duodenum, causing a small intussusception by dragging on its base. Hence, much of the pylorus had to be resected, and the duodenum directly united to the stomach, and recovery followed. The patient, a woman aged twenty-six, had had indigestion for fifteen to sixteen years, had been diagnosed to have an ulcer eight

years before, and a lump had been felt for a month before the operation.

Gastro-enterostomy.—This has proved a most valuable operation not only as a palliative measure in cancer, but as a real cure for gastric ulceration. Its importance lies in draining the stomach, so preventing decomposition and giving the ulceration an opportunity to heal. It thus prevents the dangerous complications of ulceration, *viz.*, perforation hæmatemesis, and ultimately may prevent cancer setting in.

In a number of cases a large pyloric tumour, feared to be cancer, has proved, after gastro-enterostomy, to be simple hypertrophic stenosis. Jessett[29] gives the full course and final *post mortem* examination of such a case. In April, 1890, a widow, aged fifty-six, who had suffered from indigestion for a considerable time, and who had noticed a lump in her abdomen for over a year, following which there had been wasting, pain, and vomiting, was found on exploration to have a tumour the size of a small cocoa-nut, with the stomach much dilated and made hour-glass shape by adhesion to the liver (*Fig.* 46). Gastro-enterostomy was done, and the patient regained and remained in perfect health until she died of apoplexy ten years later. At the *post mortem* a bilocular stomach was found, the pyloric pouch communicating with the jejunum through an orifice which admitted two fingers. The constriction between the two pouches barely admitted a finger; the pylorus admitted one finger with difficulty. All that remained in the position of the former mass was a contracted scar adherent to the liver.

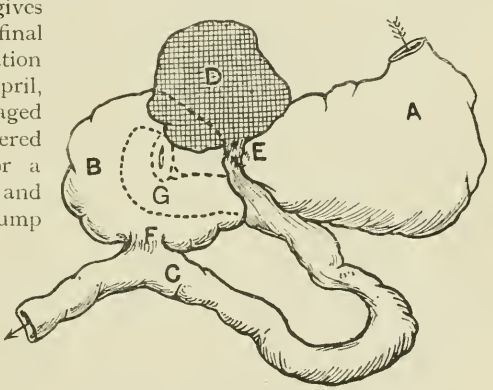


Fig. 46.—Diagramatic sketch of a case of gastro-jejunostomy. Death 11 years after operation. *A*, Larger pouch of stomach measuring 5 by 4 inches. *B*, Smaller pouch, 3 by 3 inches, containing opening of pylorus. *C*, Jejunum. *D*, Left lobe of liver. *E*, Cicatricial band of adhesion between liver and stomach which by contraction caused division into pouches *A* and *B*. *F*, Site of operation (gastro-jejunostomy). *G*, Pylorus.

For congenital pyloric stenosis more successful operations have

been recorded. Monnier[30] performed anterior gastro-enterostomy on an infant, aged four weeks, who showed wasting with peristalsis of the stomach and persistent vomit free from bile. The child was well one and a half years later. As a palliative measure for cancer, it may allow of life being much prolonged. Strauss[31] performed gastro-enterostomy for inoperable cancer on a man aged thirty-five, in whom the symptoms had existed for one and a half years. He lived three and a quarter years after the operation before he died of cancer. Alsberg[32] had a case which lived three and a half years.

REFERENCES.—[1]*Lancet*, 1901, i, p. 1,681 ; [2]*Ibid.*, Nov. 10, 1900, ii, p. 1,345 ; [3]*Ann. of Surg.*, July, 1900, p. 1 ; [4]*Lancet*, Feb. 9, 1901, i, p. 375 ; [5]*Brit. Med. Jour.*, 1900, ii, Epit. p. 65½; [6]*Ann. of Surg.*, Oct., 1899, p. 410 ; [7]*Brit. Med. Jour.*, Nov. 17, 1900, ii, p. 1,423 ; [8]*Med. Ann.*, 1901, p. 502 ; [9]*Lancet*, 1901, i, p. 1,220 ; [10]*Cent. f. Chir.*, 1900, p. 780 ; [11]*Lancet*, 1900, ii, p. 1,152 ; [12]*Cent. f. Chir.*, 1901, p. 53 ; [13]*Lancet*, April 27, 1901, i, p. 1,190 ; [14]*Brit. Med. Jour.*, July 7, 1900, Epit. p. 1 ; [15]*Ibid.*, 1900, ii, Nov. 17, p. 1,423 ; [16]Macdonald, *Ann. of Surg.*, Feb., 1901 ; [17]*Brit. Med. Jour.*, March 23, 1901, i, Epit. ; [18]*Ann. of Surg.*, July, 1900, p. 95 ; [19]*Brit Med. Jour.*, 1900, ii, Epit. p. 62 ; [20]*Med. Rec.*, Aug. 4, 1900, p. 163 ; [21]*Lancet*, April 20, 1901, i ; [22]*Brit. Med. Jour.*, 1901, i, Epit. p. 40 ; [23]*Ibid.*, Jan. 23, 1900, i ; [24]*Ann. of Surg.*, Feb., 1901 ; [25]*Brit. Med. Jour.*, 1901, i, Epit. p. 45 ; [26]*Ibid.*, 1901, i, p. 1,137 ; [27]*Ibid.*, 1900, ii, Epit. p. 2 ; [28]*Cent. f. Chir.*, 1900 ; [29]*Westminster Hospital Reports*, 1901, vol. xii, p. 109 ; [30]*Lancet*, April, 1901, i ; [31]*Cent. f Chir.*, 1901, p. 119 ; [32]*Brit Med. Jour.*, 1901, ii, Epit. p. 17.

STRABISMUS. *E. H. Holthouse, M.B., F.R.C.S.*

The scientific treatment of convergent squint makes steady progress. Operative treatment by itself gave way to spectacle treatment through the influence of Donders ; spectacle treatment is being recognized and used as auxiliary to orthoptic training. It is by the judicious use of all three methods that strabismus can now be hopefully dealt with.

Mr. C. Worth[1] has once more emphasised the essential fact that squint arises primarily from the loss at an early period of the power of fusing the images of the two eyes. This power is one that has to be acquired, and when a child suffers from congenital amblyopia or serious refractive defect in one eye, the power, if acquired, is easily lost under influences which disturb the equilibrium of the converging mechanism. The objects to be aimed at in the treatment of convergent squint are, as Mr. Worth states : (1,) To prevent the loss of central fixation in the deviating eye ; (2,) To prevent deterioration of vision of the deviating eye ; (3,) To train the fusion faculty at the earliest possible age ; and (4,) To restore the visual axes to their

normal relative directions. The use of spectacles fully correcting whatever ametropia may exist in either eye is now generally prescribed, but in addition to this, Mr. Worth recommends the instillation of **Atropine** once a day *in the fixing eye only* for the first fourteen days in each month till the deviation is cured. This is instead of the old and troublesome method of covering up the fixing eye, allowing it still to be used for distant vision, whilst enforcing upon the unatropised squinting eye, whose accommodation is not interfered with, the duty of near vision. To remove the cause of the squint by training the fusion faculty at an age when binocular vision should normally be developing, Mr. Worth has designed another form of stereoscope, or "amblyoscope," an ingenious instrument by which quite young children may learn first to see simultaneously two different parts of one picture, and finally to combine two stereoscopic pictures of the same object. In regard to operations Mr. Worth ranges himself amongst the followers of Landolt in resorting to tenotomy only in combination with an advancement, and has described an operation of his own intended to get over the difficulty of retaining the sutures in the tendon of the muscle advanced.

REFERENCE.—[1] *Lancet*, May 11, 1901.

SYPHILIS. *Norman Walker, M.D.*

Jones[1] reports his experiences on the value of the **Justus Test.** The test is based on the asserted fact that a single inunction of mercury causes a marked reduction in the percentage of hæmoglobin in all untreated cases of the various forms of syphilis. This is due to the sensitiveness of the red blood-corpuscles to the drug. In healthy persons no such reaction follows. Jones has applied the test in fifty-three cases, and the diagnosis in most cases was confirmed by a colleague. His fifty-three cases were divided into thirty-five syphilitic and eighteen control ones; of the former seventeen were acute, and of these thirteen responded, and four were negative to the test. Three of these had characteristic rashes and other evidence of the disease. Of eight cases of local sore with adenitis, two reacted positively and six negatively. His conclusions are that the test has a value in the recognition of doubtful cases, but is not infallible, and often fails. Still, in cases such as ulceration of the larynx, every piece of evidence is of value, and he thinks that this test should be placed in some such category.

Brown[2] reported results which do not encourage him to look on the test as reliable; while important if a positive reaction is given, a negative one is of little value. It is interesting to note that this

decrease of hæmoglobin is only noticed when the drug is given hypodermically or by inunction, and not when it is administered by the mouth.

Kalinine,[3] discussing early hereditary syphilis, indicates the order of frequency of the eruptions as pemphigus neonatorum, the erythematous syphilide (roseola), the erythemato-papular syphilide, mucous patches, the pustular syphilide, the scaly syphilide, the gumma, and the ulcer.

Jullien[4] draws attention to the value of the **Blue Glass** in the recognition of syphilitic eruptions. He claims for the method, which simply consists in examining the eruptions through blue glasses, that eruptions may be discovered before they are apparent to the naked eye, and that traces of bygone eruptions are still discoverable The method has not been largely adopted, and our experience with it has not confirmed the high opinion which the author has of it.

TREATMENT.—The **Serum Treatment** is occasionally referred to, but it is apparently unlikely to be generally adopted. Neisser is sceptical as to the immunity which it confers. He used the treatment in a number of cases, and in none of them was there a positive cure. He concludes his remarks with a strong commendation of mercury. Vyeviorovski[5] is of opinion that bleeding a patient with syphilis, in order to obtain serum, acts as a kind of exercise upon the blood-producing organs, and actually does good. He took serum from patients after the disappearance of the secondary manifestations, and serum from patients with gummata, and these he administered to patients in the early stage of the disease. This was followed by an increase in hæmoglobin and in the number of red corpuscles. These changes were noticeable before any change in the external manifestations was observed. The serum was equally active whether taken from treated or untreated cases. Control experiments showed that the serum of healthy people had no such effect. Moore[6] reports on the treatment of thirty cases by the injection of serum from patients in the tertiary stage. He says that obstinate cases improve rapidly, and that the benefit is more permanent than that produced by mercury and iodides. Sores heal rapidly under local application of the serum.

Browning[7] says that in gumma of the brain or cord the **Nitrites** are of material assistance to the action of mercury and iodides. They are indicated in all syphilitic diseases of the arteries. He prefers nitro-glycerin to administer; nitrite of amyl is too evanescent in its action, and nitrite of sodium sometimes causes gastric disturbances.

PLATE XIX.

Syphilis (*Secondary*).

He has also a good word to say for **Erythrol Tetra-nitrite.** He gives the drug by the mouth, and draws attention to the fact that all these agents are highly explosive.

Lindstroem[8] made observations on the blood before and after the intravenous injection of **Mercury.** The injections were made once in six days, and consisted of from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain of corrosive sublimate. Under this treatment the corpuscles rapidly increased in number, and reached as high as 6,620,000. The hæmoglobin was also increased; leucocytes were slightly diminished. He believes that the direct introduction of mercury into the blood is more useful than subcutaneous injection and, *a fortiori*, than inunction or oral administration.

Bazin[9] states that **Guaiacol** will render painless the intra-muscular injection of various mercurial preparations. A suggested formula is :—

℞ Sterilized Olive Oil ʒxx | Guaiacol grs. xxxvj
Mercury Biniodide grs. vj |

Thirty minims to be injected daily, or every other day.

Ayres[10] thinks that **Mercurol** is superior even to perchloride in the treatment of this disease. He finds that it causes less gastro-intestinal disturbance, that it controls the eruptions and pains better than any other preparation, and the mucous affections as well as any other; it can be administered in pill form. (See also "Mercury Injections," p. 41).

The diagnosis of syphilis should never be made from the eruption alone. Local sores, mucous patches, adenitis, or scars of old lesions should always be sought for. There are, however, certain peculiarities about the eruption which should suggest the nature of the disease to the observer, and lead him to enquire into the case and search for these other evidences. *Plate XLV* is an illustration of the arm of a patient with a characteristic secondary rash. There was no distinct history of infection, and the circumstances of the case did not permit of too close enquiry, but probably infection had taken place about nine or ten weeks before the drawing was taken. The spots were raised above the surface, and conveyed to the examining finger that sensation of something being present beneath the skin, which is so characteristic of these eruptions. The colour, which is fairly well shown in the plate, and which is usually described as that of copper or raw ham, is in reality a mixture of brownish yellow and red. The brownish-yellow is due to the presence of new-formed cells and serum in the corium, and the red to the blood in the dilated vessels. When the blood is pressed from the vessels by the application

of a piece of glass, the brownish-yellow colour is very distinctly seen. It somewhat resembles that of the nodules seen in lupus, but is rather paler than these. In this patient adenitis and mucous patches were present.

Plate XV is an illustration of one of the latest of the specific eruptions. The patient was sixty years of age, and had suffered from the eruption on the back of the ankle for eleven years. The disease was contracted over thirty-five years previously. The papillomatous development is not a common variety of the eruption, but the pigmentation in and around the scarred area is extremely characteristic. The pigmentation of the syphilitic scar is best described as being of a dirty greyish brown colour, unlike the rich brown which follows the eruption of lichen planus, and it is invariably associated with a scar, thereby differing from arsenical pigmentation. The history of this case illustrated the benefit of really efficient treatment. The nature of the disease had been recognised repeatedly, and iodides had been administered in varying doses, with practically no effect. He was put upon large doses of **Iodide Potassium,** up to 30 grains thrice daily, combined with $\frac{1}{12}$ of a grain of **Perchloride of Mercury,** and to the local lesion was continuously applied a piece of Unna's mercurial plaster. The results were most satisfactory, for in about six weeks the part had entirely healed up, though of course the pigmentation and the scar remained.

REFERENCES.—[1]*New York Med. Jour.*, April 7, 1900; [2]*Cincin. Lancet*, March 24, 1900; [3]*Rev. des Mal. de l'Enfance*, July, 1900; [4]*Anns. de Derm. et Syph.*, Jan., 1899; [5]*Russian Arch. of Path.*, etc., vol. vii, 1899; [6]*Derm. Zeit.*, April, 1901; [7]*Med. News*, Dec. 29, 1900; [8]*La Presse Méd.*, May 18, 1898; [9]*Sem. Méd.*, March 22, 1899; [10]*Phil. Med. Jour.*, Nov. 10, 1900.

SYPHILIS, ARTICULAR. *Priestley Leech, M.D., F.R.C.S.*

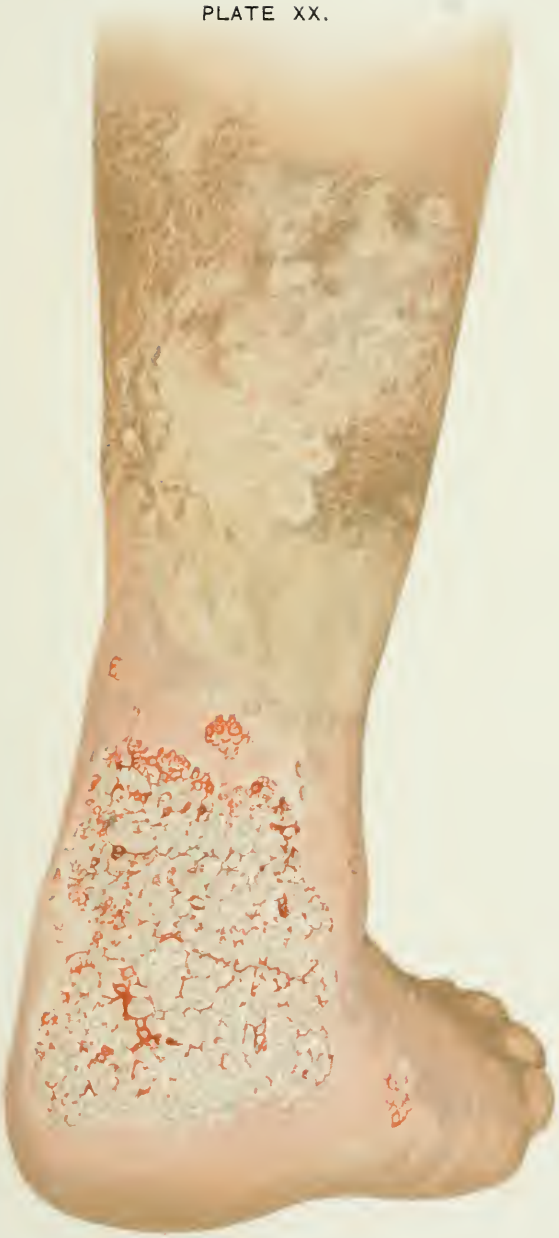
Morestin[1] divides the joint lesions of syphilis into three classes:—(1,) Early arthropathies; (2,) Late arthropathies; and (3,) Arthropathies of inherited syphilis.

1.—*Early Arthropathies.*—Among these are:—

(*a*,) Arthralgia. This is the commonest affection; there is simply pain with no swelling or impaired mobility. It is worse at night; it may affect one joint only, pass from joint to joint, or affect several joints at the same time. Rest and fixation give no relief. The larger joints are the ones chiefly affected. The pain disappears under **Mercury,** as a rule. The pain may be in the joint, in the ligaments, or over bony prominences.

(*b*,) Subacute arthritis occurs in the early secondary period; it

PLATE XX.



Syphilis (Tertiary).

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affects chiefly the larger joints and is sometimes multiple; the joint is swollen; skin red and œdematous; the synovial membrane is thickened, and there is some effusion. The pain is acute, unrelieved by rest, and often worse at night. It does not rapidly change its seat, like acute rheumatism. Fever slight or absent. Bursæ and tendon sheaths near the joints often affected at the same time. The diagnosis from gonorrhœal rheumatism is often difficult.

(*c*,) Hydrarthrosis. This is more common than is supposed, and is often unrecognised. The only sign is effusion into the joint. No pain; walking unaffected. The knee is usually affected, and often both knees. No changes in the bone or synovial membrane. It subsides under treatment, but sometimes the joint is left permanently weak. It is met with in the early secondary period, and is more common in females.

2.—*Late Arthropathies*:—

(*a*,) The synovial form. There is hydrarthrosis; it is monoarticular, and generally affects the knee, which becomes swollen, painful, and flexed; there are hard masses (gummata in the membrane and sub-synovial tissue) in the synovial sac, especially where it is reflected. No appreciable changes in the bone. Some atrophy of the muscles occurs, but otherwise the function of the joint is not much impaired. Recovers under treatment; if neglected, the gummata may break down and cause acute arthritis.

(*b*,) Osseous form. The lesion is at first limited to one of the bony extremities, the other joint structures being affected secondarily. The joint becomes swollen, and the ends of the bones thickened. Later there may be hydrarthrosis. No pain, and any limitation of movement is mechanical. There is more muscular atrophy than in the synovial form. Nocturnal pains precede the bony enlargement. The synovial and osseous forms may be combined in various degrees. The bony enlargement is due to gummatous deposits in the bone leading to rarefaction. Both the epiphysis and diaphysis are involved. The diagnosis has to be made from sarcoma, callus formation after fracture, or tuberculous arthritis. If treated early with anti-syphilitic remedies cure may be looked for; if sinuses, etc., form, active surgical treatment is called for.

3.—*Arthropathies of inherited Syphilis*.—These occur among the later manifestations of inherited syphilis. The lesion usually begins in the epiphyseal cartilage, the joint becoming affected secondarily. The different forms met with are:

(*a*,) Simple osteo-arthropathy. This is like the osseous form of late acquired syphilitic arthropathy. The knee is often affected.

(*b*,) Bilateral hydrarthrosis. Effusion, with little thickening of the synovial membrane.

(*c*,) Deforming osteo-arthropathy. Marked deformity of the joint due to malformation of the epiphysis. Osteophytic outgrowths occur, interfering with the function of the joint, and causing muscular atrophy and contraction.

REFERENCE.—[1] *Arch. Gén. de Méd.*, vol. v, 1901.

TEETH, (The). *J. G. Turner, F.R.C.S.*

Etiology of Dental Caries.—With the advance of dental science the widespread occurrence of dental caries has attracted great attention, and it is often confidently asserted that within the last few decades teeth have been far more subject to its ravages than before. Some writers assert that there is a hereditary deterioration in the quality of the teeth ; others find the cause in the food presented to the infant failing in bone-forming elements ; while one writer puts it down chiefly to the use of roller-ground flour, in place of the stone-ground flour in use up till thirty or forty years ago, asserting that in the mastication of roller-ground flour there is an increased production of acid, which acts deleteriously.

When so many theories are advanced, and in some cases proclaimed as gospel in the lay press, it is evident they cannot all contain the whole truth, and nothing but the truth, and it will be well to remember some well-proved and fundamental facts concerning dental caries, with which any theory should be capable of being correlated before being accepted. These facts may be stated in short space.

(1,) However wanting in chemical composition, or unfinished in its ultimate histological elements a tooth may be, such deficiencies can do no more than render the tooth an easier prey to dental caries when exposed to such conditions as favour its genesis.

(2,) Such defects are : (*a*,) Gross defects, pits and fissures in the enamel ; (*b*,) Minute structural defects in the enamel, leaving it less hard than usual ; (*c*,) Ill-formed dentine, allowing of rapid spread of caries when once it has obtained a foot-hold.

(3,) *All caries begins from outside*, being started and kept up by the agency of micro-organisms, which in their life-processes secrete or cause to be formed an acid capable of slowly disintegrating the enamel.

(4,) The pabulum on which these germs grow is provided by food and other *débris* lodged between and around the teeth.

(5,) In this respect the starchy, saccharine, and farinaceous foods are more injurious than the fibrous, fleshy foods.

(6,) A certain period of time is requisite for the micro-organisms to multiply, and for the action to establish itself.

(7.) Excessive acidity or alkalinity is unfavourable to their growth.

(8.) No one organism can be definitely charged with causing dental caries; many forms are at work, though some may preponderate or seem more virulent in particular cases. In general terms dental caries is a *dirt disease*, though the problem of keeping the mouth clean is an extremely difficult one.

The first stage in dental caries is destruction of enamel. By microscopic examination it can be demonstrated that dissolution of the enamel is brought about by the agency of bacteria, which establish themselves in some position, such as the buccal fissure of a lower first molar, where they are free from mechanical interference, and then by enormously increasing the capsule normal to the particular species, glue themselves to the surface of the enamel as a gelatinous plaque. (This is not the white fur so frequently seen round the necks of teeth in dirty mouths, nor is it the sordes of dry mouths, though these favour its formation.) Once fixed by means of this plaque, the micro-organisms are in position to effect the destruction of the enamel by their acid secretions or fermentations. When this has been penetrated, and the softer and more organic dentine is reached, the process goes on far more rapidly, spreading in the form of a cone with its apex inwards, and its base lateral beneath the enamel. Hence there comes a time when the enamel is deprived of its supporting dentine, and, itself weakened by the carious process, exists only as a shell covering in a cavity containing disintegrated dentine. One day this shell is broken away, and the patient imagines this accident to have been the first step in the disease. It must not be supposed, however, that every colony of micro-organisms which establishes itself in a pit or fissure also forms a plaque, or that every plaque goes on to destruction of enamel. Whether a plaque forms, and, if formed, whether caries ensue, depends on the state of the mouth, not at all on the tooth itself; this can only offer more or less resistance.

The condition of saliva favourable to the formation and activity of these microbic plaques is not yet determined. It is not dependent on general bodily health—disease *per se* has no effect on the occurrence of dental caries. Yet there is occasionally seen a condition of the oral secretions dependent on a general bodily state not yet determined, which is of itself sufficient to encourage the onset and prevalence of caries. These are matters of careful observation. It *is* dependent to a very large extent on that general condition of the oral cavity known as a "dirty mouth," and by keeping a sick person's mouth carefully cleaned caries may be avoided. Careful attention

to cleanliness, and early arrest of decay, will in all cases tend to the establishment of immunity.

Connected with this state of the oral secretions is the question of what is called *immunity*. It explains, to a great extent, why some persons who never clean their teeth never suffer from caries; and why it is the dentist can often note in particular patients periods of active decay followed by lengthy periods of immunity. Such periods frequently take place after twenty-five years of age, following perhaps severe attacks of dental caries in early adult life.

Heredity as a factor in the etiology of dental caries is not of the first importance, though it is often noted that children of parents who have had bad teeth, themselves suffer in the same way. Yet there is only a predisposition to contract caries under similar conditions, and children brought up in the same surroundings and circumstances as their parents show most clearly the hereditary factor, so much so that it has been noted through three generations that caries began in a particular position in particular teeth at almost identical ages. When there are great differences in the susceptibility of the father and mother to caries, there are likely to be sharp differences in the susceptibility of the different children, some taking after one parent, some the other, the majority appearing to follow the more susceptible parent. Yet, on the whole, Mr. G. V. Black,[1] of Chicago, who has kept careful notes for a long period, states that "the teeth of the generation now growing up do not decay so badly as did those of the generation of his early practice." Like many hereditary predispositions, that to caries becomes less or disappears with adult age.

Age.—Caries of teeth is most emphatically a disease of youth. Surprise is often expressed that "so young a person should have lost so many teeth." Yet this is but the normal course of events, and the practitioner cannot too strongly impress it on parents. In cases of great intensity of the carious process, the teeth will be practically destroyed as early as eighteen years of age.

Teeth of Micro-cephalics.—From examination of a necessarily limited number of micro-cephalics, the writer is of opinion that the individual teeth of both dentitions are much below normal size, but are otherwise of good quality. More information is wanted on this point, especially in regard to the first dentition; but should the opinion prove correct, it tends to show that the tendency to develop small is impressed congenitally on every tissue of the body, and that such operations as linear resection of bone along suture lines are foredoomed to failure.

Supernumerary Teeth.—Supernumerary teeth have been divided

according to their shape, into "supplemental," or those shaped like a member of the normal series, and "supernumerary," or such as are of aberrant form. Such a division is unfortunate and misleading, as implying an explanation where none exists. The commonest shape assumed by supernumerary teeth is that of a small cone, but frequently the crown is divided into two or three tubercles. The root is often stunted. They are found in all parts of the mouth, and while erupting early, have no definite relation in time of eruption to either series, except that they rarely come into place till after the full set of temporary teeth is erupted. Though appearing in any part of the mouth, they are found far most frequently in the incisor and canine region of the maxilla. They are far less common in the mandible, but are sometimes found in the neighbourhood of the symphysis.

In cases of hare-lip and cleft palate, supernumerary teeth, of normal or of aberrant shape, are very common, by far more common in proportion than in normal mouths, and they occur on one or other side of the ununited or partially-united cleft.

Teeth have also, though very rarely, been described as erupting in the human subject; (1,) In the lower eyelid; (2,) At the side of the nose (in one case a dermoid cyst existed as well); (3,) Along the side of the mandible; (4,) On the side of the neck; in the sheep high up on the side of the neck, and in the horse in the temporal bone, where the possibility of the existence of a tooth is well known to veterinary surgeons.

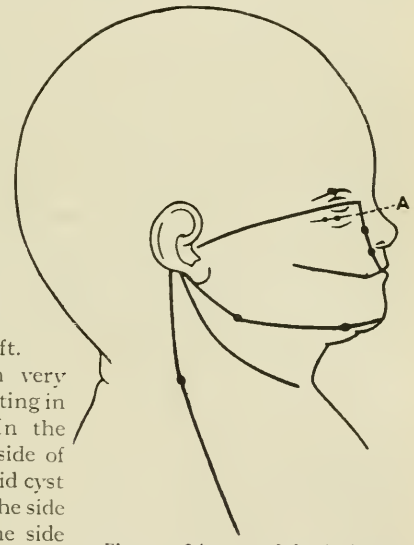


Fig. 47.—Diagram of fœtal clefts of head and neck. The thick black lines represent the clefts, and the dots show recorded cases of teeth occurring in their course. At A are several recorded cases.

Thus it is evident that in the mouth supernumerary teeth are particularly common in the neighbourhood of the fœtal clefts (the median, both maxillary and mandibular, and the orbito-nasal), and especially common when, as in hare-lip and cleft palate, failure of union takes place. The accompanying diagram (*Fig.* 47) shows also

the relation borne by recorded cases of teeth erupting on the face and neck, to the fœtal clefts of these parts, while the temporal tooth of the horse is in close relation with the hyo-mandibular cleft. There appears, thus, to be a special tendency to the formation of supernumerary teeth in the neighbourhood of fœtal clefts, and especially in cases of non-union.

The immediate origin of most supernumerary teeth is to be found in redundant off-growths from the common epithelial lamina—off-growths which have not been used in the formation of the normal teeth. Some, however, are probably due to dichotomy—are, in fact, extreme examples of gemmation.

Retarded Eruption of Teeth.—Retarded eruption of teeth may be due to general or local causes, but in some cases no cause can be assigned. The commonest and most generally recognized of general causes is rickets, affecting most often the temporary teeth. At whatever period rickets supervenes, interference with eruption is an almost constant symptom. Hence late eruption, or prolonged eruption, especially of temporary teeth, should always excite suspicion of rickets (*see below*, Table of Eruption).

In addition to retarded eruption, small cystic enlargements sometimes develop over the teeth that are due to erupt, presenting on the gums as little, blueish, fluctuating swellings. They are formed by excessive secretion of fluid between the innermost layer of the enamel-forming organ, now closely applied to the enamel of the tooth, and known as Nasmyth's membrane, and the outer layer of the same organ, in a position where there is normally a small amount of fluid secreted over every erupted tooth. They are thus lined with an epithelium derived from the enamel-forming organs, and are analogous to dentigerous cysts. They are found also in the mouths of individuals free from rickets, but the writer has seen them chiefly in the mouths of rickety children, situated over teeth which should already have erupted. They may generally be left alone; the only danger is that an opposing tooth may so bite on the cyst as to set up ulceration, which may be difficult to control in an ill-fed child.

Cretinism is a second general condition invariably accompanied by retardation of eruption, both of temporary and permanent dentitions, the retardation being in general on a par with the individual's general backwardness of development, and improving with the general improvement under treatment. The eruptive process, however, tends to go forward to a more or less normal completion after all mental and bodily growth has ceased, though the eruption of the "teeth of succession," that is, the incisors, canines, and

bicuspids—teeth which replace the temporary dentition—is interfered with by a want of activity in the process of absorption of the roots of the temporary teeth. This gives rise to an appearance of a "double row of teeth."

In untreated cretinous infants eruption may be delayed till after the second year, and then may begin irregularly. Thus the writer has models of the mouth of a cretin of two years, in whom the four first temporary molars have just begun to erupt, and are the only teeth showing, and another set of models of the completely edentulous mouth of a cretin of eighteen months.

As illustration of improvement under treatment the writer has models of a child of eight and a half years who then presented a complete set of temporary teeth, no permanent tooth, *e.g.*, first permanent molar, being erupted. Her lethargy was such that she made no objection to having her teeth examined. Two years later, after continuous treatment in the interval, the permanent incisors, central and lateral, and the first permanent molars of both jaws were erupted, while there was a corresponding general improvement; so much so that she had acquired all a normal child's horror of having her teeth looked at, and could not be persuaded to allow casts to be taken. In a similar case of a child of ten treated during the same period almost identical improvement took place. Before treatment, at ten years of age, only the two lower central incisors were present of all the permanent teeth. Two years later she presented the same dentition as the foregoing case, with the addition of one lower pre-molar.

As illustrating the state of the mouth in adult cretins the following cases may be noted:—

Male, twenty-seven.—Teeth normal.

Male, twenty-five.—Normal, except right upper temporary canine retained and permanent tooth not erupted; left lower temporary canine retained, and permanent tooth erupted outside.

Female, thirty.—Upper teeth normal, except that canines are only partially erupted. Lower as in accompanying chart,

Left side M_2, M_1, Pm_2 and $_1$, C, TC, I_2 and $_1$,
Right side M_2, M_1, Pm_2 and $_1$, TC, I_2, TI,

where *T*, temporary; *I*, incisor; *C*, canine; *Pm*, pre-molar, or bicuspid; *M*, molar; the teeth being crowded together, and giving the appearance of two rows.

Heredity and congenital influences do not seem to play any important part in retarding eruption of teeth. In the case of a child, the subject of mal-development of the left side of the cranium

and face, the left maxillary arch was flattened, and the left central incisor remained only half erupted till the age of twelve, when it again began to erupt, and eventually took its normal place. In this case the mal-development was congenital; there was no use made of forceps at birth, and no difficulty in labour, the child being the third of a healthy family.

Of local causes of retarded eruption, "overcrowding" and undue retention of temporary teeth or their roots are the most important causes. Unusually large size of the teeth or presence of tumours are less important factors. Mal-position of the teeth may be cited, but is in most cases the effect of one or more of the above causes. The teeth most likely to be crowded out and to remain unerupted are, from their position, the canines, especially the upper canines which are developed high up in the bone, and the third molars. Teeth delayed in their eruption in this way may erupt on relief of the overcrowding; or, if no relief is afforded, they may remain *in situ* till with the approach of old age atrophy and absorption of the overlying bone takes place, and they are exposed. Such cases are sometimes recorded as eruption of teeth at sixty or seventy years of age, or magnified into the appearance of a new set, and, if occurring in a devotee, will pass as miraculous.

Undue retention of temporary teeth or their roots most often depends on a failure of the absorbent process, but is sometimes due to a tooth getting wedged between those on either side, when the size and shape of its crown have been modified by caries. In some mouths failure of absorption occurs in the case of apparently healthy teeth, especially, as noted above, in the case of cretins; but more generally the failure of absorption follows premature death of the pulp, especially if accompanied by inflammatory trouble or abscess. Hence it should be a rule to remove all "dead" temporary teeth, or their roots, within a short period of their normal shedding, *i.e.*, about the time the tooth of succession is to be expected (*see* Table of Eruption).

Mal-position of teeth, leaving the tooth in a position whence eruption is an impossibility, is usually due to overcrowding, or to a retained temporary tooth diverting the erupting tooth from its course. But there are instances, as in the case of a lower wisdom tooth recently described before the Odontological Society of Great Britain, in which the tooth was found absolutely inverted and buried in the substance of the ascending ramus, where such an explanation seems inadequate.

Cases are now and then met with in which, without any available

explanation, one or more teeth are delayed in eruption. Such cases, in the writer's experience, chiefly concern the second dentition, and always rectify themselves in time.

Retarded Eruption of Wisdom Teeth.—A special and important case of retarded eruption, on account of the trouble often accompanying it, is that of the wisdom tooth. The lower third molar is the chief offender, but the upper wisdom tooth is occasionally at fault. The writer has seen, in a man of thirty, severe pain down the throat and inability to open the mouth beyond about a quarter of an inch, due to difficult eruption of upper wisdom teeth. In this case skiagrams showed the absence of lower third molars and enabled the upper third molars to be located. Their extraction was followed in about a week by entire relief both of the pain and trismus.

The upper wisdom tooth may be so crowded out, especially if unusually large, as to eventually erupt in an outward direction, in which case the cheek may become ulcerated by constant friction. Extraction of upper wisdom teeth is not usually a difficult matter, but care must be exercised not to break off the tuberosity, and if the tooth is still high up in the alveolus, not to push it up into the antrum, from which it is then separated by but a thin septum of bone.

Overcrowding and mal-position are the chief causes of retarded eruption of lower wisdom teeth. Overcrowding may be the only cause, but is frequently combined with a certain amount of mal-position, the tendency being for the tooth to assume a horizontal direction with the crown looking forward. The roots of lower wisdom teeth, and especially in a crowded mouth, are often deformed, the last portion being curved back in the direction of the growth of the jaw; a knowledge of this fact is important in attempting to extract these teeth.

The troubles to which lower wisdom teeth give rise when their eruption is impeded are considerable. Pain is the most constant. The nearness of the mandibular nerve explains the frequency of pain, referred to the ear and down the neck, and accounts for rarer cases of neuralgia of the side of the tongue or in the tonsil of that side. When erupting with a horizontal direction, the crown of the wisdom tooth not infrequently impinges low down on the back of the second molar, and either by inducing absorption, or by favouring the production of caries by retaining *débris* of food, leads to exposure of the nerve pulp of the second molar and to severe tooth-ache.

Inflammation with infiltration of surrounding parts running on to abscess, is a frequent accompaniment of difficult eruption of lower

wisdom teeth, and is accompanied by degrees of pain and trismus (due chiefly to mechanical interference with movement of the inflammatory infiltration, though in some degree depending on reflex spasm of muscles), and swelling of lymphatic glands. In some cases the erupting tooth carries before it the covering of gum, which then gets bitten on by the opposing upper tooth and consequently inflames and ulcerates. In others the tooth lying in its partly-opened crypt allows accumulation and putrefaction of food *débris*. This is followed by inflammation and suppuration—the formation of an abscess round the tooth. When there is an abscess round an unerupted wisdom tooth, there has always been passage for access of food *débris* or germs from the mouth, either directly, as described above, or through a thin layer of tissue whose resistance has been lowered by the attempts at eruption of the underlying tooth.

In the treatment of this condition, if it is decided to preserve the tooth, any overlying gum may be destroyed with caustic, or snipped away with scissors, and kept clean with a mouth-wash of :—

℞ Acid Bor. gr. x | Aq. ad ℥j
Glycerin ℥ij |
Used frequently.

If it is decided that there is not room for all the teeth, it becomes a question whether to extract the wisdom tooth itself, or one of the more anterior teeth. If the wisdom tooth is a sound tooth, erupting vertically, one of the anterior teeth may be extracted and the wisdom tooth left to come forward. This should generally be the second molar, but in cases in young persons where but little room is wanted a decayed first molar, or even premolar, may be sacrificed provided the bite is not "locked." When extraction of a more anterior tooth is undertaken for relief of neuralgia due to an erupting wisdom tooth, some months may elapse before the pain disappears. If it is decided to extract the wisdom tooth itself, this may often be easily done with a straight elevator pushed in from the side between the last two molars ; in the levering out the tooth is made to follow a curve corresponding to the curve which very possibly exists in the roots of the tooth.

If, however, the tooth lies horizontally, or is deeply imbedded in the ascending ramus, the operation of extraction becomes a serious one. A skiagram, and especially a stereoscopic skiagram, will give valuable information. When the position of the tooth has been as far as possible ascertained, the patient should be put under ether, and the bone round the tooth removed with a small chisel, or with round burs on a dental engine, till the tooth can be extracted without

undue force. After such an operation the cavity left must be carefully syringed several times a day, and small pieces of bone may be expected to come away for some days.

TABLE OF ERUPTION.

Temporary Teeth.

	Months after Birth.	Occupying as a Rule
Lower central incisors	7	1-10 weeks
Upper ,, ,,	9	4-6 ,,
Upper and lower lateral incisors	12	4-6 ,,
First molars, upper and lower	14	1-2 months
Canines ,, ,,	18	3-5 ,,
Second molars ,, ,,	26	3-5 ,,

Permanent Teeth

	Erupting at
First molar	6 years
Lower central incisors	7 ,,
Upper ,, ,,	8 ,,
Upper and lower lateral incisors	9 ,,
First premolars	10 ,,
Second ,,	11 ,,
Canines	12 ,,
Second molars	12 ,,
Third ,,	17-24 ,,

TENDO ACHILLIS (Lengthening). *Priestley Leech, M.D., F.R.C.S.*

Hibbs,[1] of New York, recommends the following method for this purpose. The tendo achillis was exposed by an incision 1½ inches in length, made to its outer side; within ½ an inch of its insertion through two thirds of its substance (*E* to *C*, *Fig.* 48), and the knife was then turned and the tendon split up a certain distance (*C* to *D*, *Fig.* 48). A quarter of an inch above the end of the longitudinal cut another transverse cut (*G* to *B*, *Fig.* 48) was made from the opposite side through

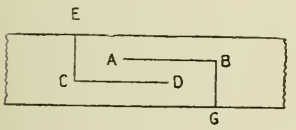


Fig 48.

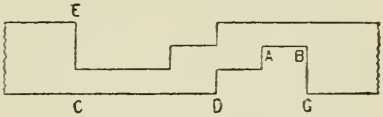


Fig 49.

two thirds of the substance of the tendon, and the knife being turned, the tendon was again split to within a ¼ of an inch of the first transverse incision (from *B* to *A*). When traction is applied lengthening would occur as shown in *Fig.* 49, and it would be equal to the sum of the two longitudinal cuts, minus the sum of the two laps of a quarter inch each. It is important that the skin incision be at

the outer side of the tendon, to avoid irritation from the heel of the boot or shoe. Hibbs says he has since learnt that this method has been used by Sparon, a Danish surgeon, in a case of traumatic talipes equinus. The great advantage is the securing of the exact amount of lengthening of the tendon which might be required.

REFERENCE.—[1]*Lancet*, Nov. 8, 1900.

TESTIS (Affections of).

J. W. Thomson Walker, M.B. Ed., F.R.C.S.,E.

Atrophy of the Testis.—Dr. Wolbrast[1] reports the following case of atrophy of the testis following gonorrhœal epididymitis.

In a young man of twenty-one years acute epididymitis was a complication of a third attack of gonorrhœa. A hard, thickened epididymis was left. Two years later he had a fourth attack of urethritis, and the testicle again became inflamed. About a year after the second attack of epididymitis he noticed that the testicle was diminishing in size, but there was no pain in the organ. On examination the testicle was spherical, three-eighths of an inch in diameter, rather hard, and extremely sensitive. When the writer saw the case a year before, the testicle was double its present size. Such a marked degree of atrophy is rarely observed.

In the great majority of cases inflammation of this organ associated with gonorrhœal urethritis terminates in resolution with unimpaired function. Often a hard nodule is left in the tail of the epididymis which may obliterate the duct of the testis, and, exceptionally, the entire epididymis is permanently thickened. The cord itself may even be involved, and may resemble an ordinary wooden lead-pencil in shape and consistence.

In many of these cases, although both testes may be involved in the inflammatory process, there is no loss of function, nor does sterility necessarily follow, although it often occurs.

In rare cases of severe inflammation where the testicle proper is invaded, the infiltration may become organised, and exercise so much pressure on the glandular substance of the organ as to cause it to undergo atrophy and become absorbed. Gonorrhœal orchitis and epididymitis is the most common cause, but other varieties of testicular inflammation may also produce atrophy.

The frequency of atrophy following mumps is disputed. Tonsillitis may be complicated by orchitis, which often leads to atrophy of the testis. Atrophy has also followed strangulation of the testis and epididymis resulting from torsion of the spermatic cord due to sudden and severe muscular effort. This is observed most often in cases of undescended or misplaced testis. Even slight bruises of the

testicle, especially in youth, may be followed by atrophy. After severe bruises, as well as gunshot and other wounds, atrophy very often takes place.

Of the non-inflammatory conditions producing testicular atrophy, pressure by surrounding parts and interference with the circulation are probably the most frequent causes. This is seen in the atrophy which may follow hydrocele, varicocele, chronic hæmatocele of the tunica vaginalis, herniæ, and the tying of the veins of the spermatic cord in the operation of varicocele.

Syphilitic orchitis may lead to atrophy, and tuberculous disease may produce a like result.

Atrophy has been observed after the acute form of orchitis accompanying malarial fever. It is also seen in old age and in those suffering from premature senility, and it is said to have been caused by chronic alcoholism without other lesions.

Orchitis.—Chevillot[2] recommends very highly the use of **Salicylate of Methyl** in the treatment of orchitis. He employs the following formula: Salicylate of methyl, 3 drachms; extract of belladonna, 1 drachm; fresh lard, 1 ounce. This is made into an ointment, which is changed into a cerate by adding from 45 to 60 grains of pure wax. The testicles are covered with this pomade, wrapped in cotton-wool, and supported by a suspensory bandage. The patient remains in bed, partakes of a sparing diet, and **Salol** (5 grains daily) is administered. Pain is greatly decreased in a few hours, and permanently relieved in a short time. The use of lard instead of vaseline in the ointment aids absorption of the salicylate.

Epididymitis.—Christian,[3] of Philadelphia, reports favourably upon the use of **Guaiacol** in epididymitis. He adopts the following line of treatment for acute cases: A saline laxative is given in the early morning, and one Swedish leech is applied over the spermatic cord of the affected side. The patient remains in bed for forty-eight hours, and moist heat is continuously applied. The testicle is then gently massaged with a small quantity of guaiacol ointment (25 per cent.) with lanolin as the vehicle. A piece of lint is then spread with the ointment and applied over the testicle. The whole scrotum is enveloped in a layer of absorbent cotton, and the dressing is retained in place by a snugly-fitting laced suspensory bandage. The dressing is changed every second day, and after six days is replaced by the following ointment: Ung. hydrarg., ichthyol, lanolin, ung. belladonn. āā æq. partes.

The results obtained by this method have been very satisfactory. Fifty-four out of sixty cases treated obtained great relief from pain

in twenty-four hours. The testicle returned to its normal condition in two or three weeks, and often in a shorter time.

Tuberculous Epididymitis.—Paladino-Blandini[4] has performed a series of experiments to determine the mode of development of tuberculosis of the epididymis. He finds that the tubercle bacillus, like other motile bacteria, can travel from the urethral orifice to the epididymis or even to the testicle. Infection by coitus is therefore an admissible hypothesis. The route travelled by the germs is in direct relation to their virulence; thus, the epididymis receives the germs before the testicle, and is on this account more frequently attacked. The bacteria are propagated on the mucous surfaces without involving the subjacent tissues. In this manner gonorrhœal epididymitis can be explained without reference to lymphatic infection or to general infection. Nevertheless, the gonococcus can reach the epididymis by several routes, and finds there a suitable nidus on account of the great vascularity of the organ. The mere presence of the tubercle bacillus does not suffice to evoke an inflammatory process. Congestion of the organ is necessary to produce a specific inflammation, just as it is essential to call forth an orchitis by the bacillus coli.

Tuberculosis of Testis. (See "Tuberculosis, Surgical.")

Treatment of Deformity from Double Castration.—Gersuny,[5] of Vienna, has endeavoured to reduce the deformity after various operations by the injection of **Sterile Vaseline** into the cellular tissues. Among other deformities he mentions a case of total castration for tubercular epididymo-orchitis, in which there was much distress on account of the appearance of the scrotum. After several sittings, Gersuny succeeded in injecting 11 c.c. of sterile vaseline into the left half of the scrotum, and 10 c.c. into the right half. The injection was followed by some pain, but this passed off and a satisfactory result was obtained. Two firm bodies about the size and shape of the testicles could be felt on palpation.

Radical Treatment of Varicocele.—Naruth[6] has found that all his cases of varicocele were associated with enlargement of the inguinal canal. He believes that this is of some importance in the etiology of the condition, and has devised a new method of operation. The operation resembles in every way Bassini's operation for inguinal hernia, and the veins are resected in the inguinal canal. He claims that the veins are more certainly interrupted here, that the spermatic artery is more easily avoided, that the inguinal canal is narrowed, and that the testis is raised. The position of the incision is more favourable to primary healing than in the scrotum.

REFERENCES.—[1]*Therap. Gaz.*, June 15, 1900; [2]*Jour. de Méd. de Paris*, Feb. 18, 1900; [3]*Therap. Gaz.*, March 15, 1900; [4]*Ann. des malad. des org., Gen.-urin.*, Oct., 1900; [5]*La Sem. Méd.*, Dec. 18, 1900, [6]*Wien. klin. Woch.*, Jan. 25, 1900.

THYROID GLAND (Operations on). *W. Milligan, M.D.*

Semon[1] considers the following as indications for the performance of a thyrotomy: (1,) Foreign bodies in the larynx; (2,) Injuries to the larynx; (3,) Laryngocele; (4,) Stenosis of the larynx; (5,) Acute laryngeal perichondritis; (6,) Laryngeal tuberculosis (including lupus); (7,) Scleroma of the larynx; (8,) New growths in the larynx: (*a*,) benign; (*b*,) malignant.

Priestley Leech, M.D., F.R.C.S.

Mr. Godlee[2] reports a case of acute suppuration of the thyroid gland, complicating typhoid fever. There was a swelling at the lower part of the neck, which rapidly increased in size, the temperature 104° and 105°; there was difficulty in swallowing, and no movement of the mass on deglutition, and the surrounding structures did not move freely over the swelling. An incision was made in the middle line, and a cavity containing pus mixed with friable tissue and a reddish brown sticky fluid, was reached at the depth of half an inch. The different varieties of thyroid inflammations are:— (1,) Idiopathic with spontaneous subsidence. (2,) Epidemic, as described by French military surgeons, of the nature of an acute specific fever. (3,) The septic form, of which this case was an example. This septic inflammation has occurred in connection with many infectious states. (Respecting disorders of the thyroid gland, see also "Goitre" and "Metabolism.")

REFERENCES.—[1]*Lancet*, Aug., 1900; [2]*Brit. Med. Jour.*, June 1, 1901, p. 1341.

TIC CONVULSIF. *Grame M. Hammond, M.D., New York.*

Pitres[1] has found respiratory **Gymnastics** very serviceable in relieving severe cases of tic convulsif. He particularly cites the case of a young man, aged twenty, who had suffered severely from this disease for eleven years. Every six or eight seconds the patient was seized with violent spasmodic movements of the head, trunk, or extremities, accompanied by a sudden expulsion of involuntary cries or inarticulate groans. It was noted that when the patient sang or counted at the top of his voice, or when he took deep, regular, rhythmical inspirations, the attacks were greatly diminished. Three or four times a day, for ten minutes at a time, the patient was placed with his back against a wall, and was instructed to take as slow and deep respirations as possible, raising his arms during

inspiration and allowing them to fall during expiration. From the beginning the attacks became less frequent. The treatment was continued for nine months, at the expiration of which time the patient was entirely cured. The author has employed similar treatment with success in several less severe cases.

REFERENCE.—[1] *Am. Jour. Med. Sci.*, May, 1901.

TONSILS (Diseases of). *W. Milligan, M.D.*

Mayer[1] regards the tonsils as portals of infection. He has arrived at the following conclusions: (1,) Infections arise in the tonsil; (2,) Tonsillar infections are often serious in their sequelæ, and every step to prevent recurrent attacks should be taken; (3.) Existing tonsillar disease should be energetically treated; (4,) Careful examination and treatment are absolutely essential in the interim; (5,) When following angina, the heart and other organs should be examined from time to time.

Tonsillitis.—Detiorler[2] recommends the application of **Tincture of Iodine** with galvanism. The positive pole, tipped with cotton, is saturated with tincture of iodine and placed on the tonsil, the negative pole being placed on the throat at the angle of the jaw.

REFERENCES.—[1] *Jour. Am. Med. Assoc.*, Dec. 2, 1899; [2] *Therap. Gaz.*, June 15, 1900.

TRACHEOTOMY (Removal of Foreign Bodies in the Bronchi). *Priestley Leech, M.D., F.R.C.S.*

Ricard[1] relates a case where the cannula of a tracheotomy tube had fallen into the trachea, and radiography showed the cannula to be seated across the bifurcation of the trachea, the smaller end directed into the right bronchus. Attempts to extract it by the tracheotomy opening were abandoned, as they led to violent and dangerous attacks of asphyxia. Ricard opened the anterior mediastinum, but could neither feel the cannula nor the bifurcation of the trachea, nor the bronchus. The patient died of septic mischief two days later.

Milton,[2] of Cairo, reports a similar case. This patient also died of septic mischief, but he removed the cannula. The method of gaining access to the anterior mediastinum was different in each case. Milton made a vertical incision from the tracheotomy wound downwards along the middle line; the finger was introduced behind the notch of the sternum, after the soft parts had been separated from the bone, and the sternum was sawn into two halves. Commencing at the notch a chisel was inserted into the incision, and rotated so as to allow of the introduction of two powerful retractors,

by which the two halves of the sternum were separated. The trachea was fully exposed as far as the point where the innominate vessels crossed, but the bifurcation could not be seen. A hook was then introduced into the tracheotomy wound, and the trachea was pulled upwards, and this with retraction of the vessels allowed the bifurcation to be plainly seen. An incision was made into the trachea just above the bifurcation. The cannula of the tracheotomy tube could not be seen, but the little finger introduced felt it, and it was removed by means of a pair of forceps.

Ricard's incision was different from Milton's, and would apparently give easier access, particularly if Milton's manœuvre of pulling up the trachea by a hook in the tracheotomy opening were adopted. Ricard's incision is as follows:—The incision commences at the left sterno-clavicular joint, follows the upper border of the sternal notch to about half an inch along the right clavicle, and then curves perpendicularly downwards parallel to the right border of the sternum, and about 4 c.m. (1½ inches) from it, as far as the upper border of the third rib, where it turns at right angles across the sternum as far as the left border of the sternum. This incision marks out a U-shaped flap, the convexity of the U being towards the right. This flap is dissected up so as to expose the right costal cartilages and the right half of the sternum, and the soft parts between the intercostal spaces; the cartilages are divided from the ribs with a scalpel, and the soft parts in the posterior part of the sternum are exposed. In order to expose the anterior mediastinum, the sternum is disarticulated from the clavicle, and is then cut down the middle. There is little bleeding. Milton says drainage is possible in three directions: forwards through the sternum, upwards to the neck, or backwards through the middle and posterior mediastina. He recommends drainage through holes in the sternum, and union of the sections of the sternum throughout its length.

M. Quénu, in discussing Ricard's communication, said he would prefer the posterior route to the anterior route. The anterior way he thinks is risky on account of the great vessels; it does not give access to the bifurcation of the trachea, but at a higher point, and consequently does not allow exploration of the bronchi, and, moreover, the front of the trachea is exposed where the cartilages prevent one feeling the foreign body. The anterior route he thinks ought to be reserved for interventions upon the heart and the pericardium. From researches on the dead body Quénu recommends the following technique for the posterior route: A posterior flap in the form of a shutter, reaching from the third to the tenth rib, and turned

inwards ; resection of the fourth, fifth, and sixth ribs, and stripping off of the mediastinal pleura. By the help of large retractors the lung is pulled outwards, the œsophagus and the pneumogastric inwards ; the azygous vein is either ligatured and divided or pulled out of the way ; then the left index finger having recognised the posterior surface of the trachea and bronchi by means of the tubercles which are at the termination of the cartilaginous rings, tries to feel for the foreign body through the thin membrane lying between the rings, and by drawing the trachea forwards it can be incised and the foreign body removed.

REFERENCE.—[1]*Gaz. des Hôp.*, No. 35, 1901 ; [2]*Lancet*, Jan. 26, 1901 ; [3]*Gaz. des Hôp.*, No. 39, p. 376, 1901.

TRANSFUSION. *R. Hutchison, M.D.*

Haynes[1] after describing various complex saline solutions which have from time to time been recommended for subcutaneous transfusion, concludes that "Thousands of experiments have proved most conclusively that for efficiency, freedom from danger, and ease of administration, the subcutaneous injection of normal salt solution (hypodermoclysis), 6 drachms of sterilised salt to 1 gallon sterilised water, at a temperature of from 110° to 120° F., excels any and all things that have ever been used to relieve those suffering from shock and from the effects of hæmorrhage, and as an eliminant in septic and toxic conditions. When life is almost extinct, and the patient's vitality so low, that the probability of absorption from the subcutaneous spaces is slight, or where the tissues are œdematous, then the solution should be injected into a vein, although the dangers of injection of air, too rapid distention of heart, phlebitis, thrombosis, and embolism should always be borne in mind."

Dr. Robert C. Kemp[2] recommends the space between the highest part of the crest of the ilium, and the lower border of the ribs toward the outer margin of the lumbar region, as the site of election. Dorsal posture is not interfered with, nor do muscular or respiratory movements cause discomfort. Strength of solution, 1 drachm of sodium chloride to 1 pint of water. Everything connected with the operation must be aseptic. The specific effect on renal secretion produced by small quantities of normal saline solution appears rapidly. When irrigations were given and potassium ferrocyanide was added to the solution, the urine gave a blue reaction with ferric chloride in less than two minutes, and in addition there was increase of urinary flow. If hypodermoclysis be practised, a similar reaction can be obtained in less than four minutes, with an increase in renal secretion. A saline enteroclysis (110° F.) causes the following :—

(1,) An immediate increase in arterial tension ; if the temperature of the injection is under 110° F., this result does not follow.

(2,) At the expiration of ten minutes this stimulation seems to reach its maximum point ; arterial tension then remains unchanged.

(3,) Increase of renal secretion begins after ten minutes, coincident with the increased arterial tension.

(4,) At the same time there is an increase of temperature.

(5,) A second marked increase of renal secretion occurs at the end of twenty minutes' enteroclysis, due to absorption from the intestine.

In uræmia, shock, etc., lymphatic absorption is nearly at a standstill; even a small hypodermoclysis requires a long time for absorption ; in addition there is no stimulating effect from heat. Saline solution distributed over a large surface, as the peritoneum, either by enteroclysis or enema, has no resistant tension to overcome. There is a wide-spread area for absorption, together with reflex stimulation of the circulation by heat, and hence, rapid lymphatic absorption. Thus the action of a hypodermoclysis can be much hastened by a simultaneous hot enema or enteroclysis at 110° to 125° F. In hæmorrhage from typhoid and gastric ulcers, hypodermoclysis replaces fluid. It enters the body slowly through the lymphatic system, and is less likely than infusion to cause an increase in hæmorrhage. Hypodermoclysis is recommended in various forms of poisoning, especially when the drug is eliminated through the kidneys. In pleurisy with effusion, with renal insufficiency, hot enteroclysis may produce sufficient diuresis to absorb the effusion without aspiration.

An article in the *Therapeutic Gazette*,[3] after insisting upon the therapeutic value of saline transfusion, mentions some precautions which should be taken to prevent danger. The supply of fluid to the subcutaneous tissues ought never to be so free as to produce a huge swelling resembling a hæmatoma. While a certain amount of swelling necessarily comes from the extravasation of fluid, it ought not to be tense or so large as to indicate that the body cannot absorb it almost as fast as it is poured in. Of course, in instances where the body is starved of blood because of hæmorrhage, absorption takes place more rapidly on the part of the hungry blood-vessels than in a case of Bright's disease, when the subcutaneous injection is employed to dilute poison and to increase urinary flow. Therefore no definite time for the duration of the injection can be named, since the hæmorrhage case on the one hand should receive and can absorb the fluid rapidly for the needs of the body ; while the renal case not only does not need it within the next few minutes, but will

not absorb it with sufficient rapidity to prevent great subcutaneous swelling unless the flow is slow. A very common fault is the employment of water which is not hot enough. Even although the fluid may be quite hot when it is placed in the reservoir, it very speedily cools as it passes through the long thin rubber tube which conveys it to the needle in the patient's skin, and is delivered too cold. There are two ways in which this fault can be avoided; one is by using very hot water in the reservoir, which possesses the disadvantage that should the flow be too rapid the patient may be locally burned; or a section of the tube from the reservoir may be coiled several times in a basin of very hot water, which is renewed from time to time. The water as it is delivered to the patient should be from 105° to 106°.

Eastman recommends the addition of alcohol to the fluid employed for transfusion. He uses 1 part of well matured whisky to 20 of saline. He claims for this mixture the advantage of not merely increasing the volume of the blood, but of strengthening the heart to do its work, and recommends its use in toxæmias, but only when the condition of the patient is such as to preclude the administration of alcohol by any of the common routes.

REFERENCES.—[1]*South Calif. Pract.*, Oct., 1900; [2]*Med. Rec.*, 1900, No. 15; [3]Feb. 15, 1901.

TUBERCULOSIS OF LUNG. (See "Phthisis.")

TUBERCULOSIS OF THE SKIN. *Norman Walker, M.D.*

Lupus.—There is not much new in the treatment of lupus, almost all attention having been devoted to the various methods of photo-therapy. Hallopeau[1] recommends the treatment with **Permanganate of Potassium.** It is specially useful in the ulcerating form, and is applied either as a compress saturated with a 1 in 50 solution, or the powdered permanganate itself is applied daily for a quarter of an hour to the spots.

Dethlefsen[2] writes enthusiastically of the results of treatment by the **Chloride of Ethyl** spray. The affected part is frozen daily, and it is claimed that the scars left after this treatment are as good as those left by the Finsen method.

Bulkley believes that there is reason to fear that the hopes held out by the **Finsen** method may prove illusory, like Koch's tuberculin; but the general feeling is that the methods of photo-therapy have come to stay. One can hardly take up any medical journal without seeing a report of some case treated by the **X-rays** with benefit. Accidents seem to be less common than they were, and most of the

reports, which are too numerous to quote individually, tell of steady improvement, with very little reactionary dermatitis. The rays have the advantage over the Finsen method that they affect the mucous membranes, and to some extent the deeper infiltrations. The technique of the method remains the same, the patient being exposed at a distance of about six inches, the unaffected parts covered with lead foil, and exposures of about ten minutes' duration being made daily or every other day.

The Finsen method has been made more attainable by having been simplified by other workers, and the apparatus can now be purchased at a quite reasonable cost, and installed in any town with an electric supply.

At the Cheltenham meeting of the British Medical Association,[3] Mr. Morris opened the discussion on the subject. He is a firm, but not rabid, believer in the new method of treatment, and he showed some patients and illustrations, which demonstrated even to the most sceptical the value of the treatment. The advantages of the method were, he said, its reliability, its painlessness, and the excellent cosmetic results. The disadvantages were the long time required for treatment, and the expense, which works out at between 6/- and 7/- per patient per day.

Mr. Morris was followed by Dr. Sequeira, who is in charge of the Light treatment at the London Hospital. Each lamp is capable of treating four cases at a time, and between sixty and seventy patients are treated daily. Dr. Sequeira demonstrated an apparatus with which they had had at least as successful results, and which was procurable at a cost within the reach of any small provincial infirmary. It is a modification of an apparatus designed by M.M. Lortel and Genoud, and it is undoubtedly greatly improved by its English modification. Finsen commenced his Light treatment by using the sun, and since the sun is as rare in Copenhagen as it is in this country, he was driven to electric light as a substitute. Imitating too closely his example, he hung his imitation sun up in the middle of the room and focussed the rays down on the patient. The French inventors place the patient and the light close together, and thus the costly and cumbersome arrangement of rock crystal lenses is dispensed with. The apparatus consists of a small arc lamp, such as is used in an electric optical lantern The whole is surrounded by a water jacket, and Dr. Sequeira has so arranged his modification of the Frenchmen's apparatus that one stream of water suffices to keep the whole cool. The extent of surface treated at a time is nearly four times as great as that treated by Finsen's apparatus, and

the desired effect is produced in something like one-third of the time. A still cheaper apparatus was shown in the exhibition by the Dowsing Radiant Heat Company, but it had not the advantage of universal mobility which Dr. Sequeira's apparatus has.

There were present a considerable number of X-ray experts who discussed the matter from the standpoint of the electrician. There seemed to be general accord that hard tubes had a more excellent therapeutic effect than soft, which were more liable to cause dermatitis. Dr. Blacker, who followed Dr. Sequeira, and who speaks with authority as an expert electrician, was extremely discreet in his praise of the method, and formed an admirable contrast to some writers who are apparently of opinion that in the X-rays has been found a panacea for each and every disease, not only of the skin, but of the other organs as well. In speaking on the discussion, I took occasion to point out that however efficacious and useful both the methods of Light treatment were, their combination with the older and long established methods was likely to be followed by greater success than when slavish devotion to the new methods excluded all other treatment.

The X-rays are the most suitable treatment for very widespread cases of lupus. They are the only hopeful treatment for extensive rodent ulcer, but in more limited cases of lupus, where the appearance has to be greatly considered, then the Finsen method, with its extremely perfect scar, is to be preferred.

Colquhoun[4] describes a simple apparatus by which, in countries where the sun is to be depended upon, the Finsen rays may be obtained. The patient sits facing from the window; the sunlight is reflected from a mirror, and the rays are focussed through a bi-convex lens, and are then passed through a bottle containing a blue solution to absorb the red rays.

Erythema Induratum.—MacLeod and Ormsby[5] report two cases which they had examined histologically. The first case was a woman, aged twenty-five. No history of tuberculosis. For years she had a weak circulation, and for five years an acneiform eruption on the legs. Eruption was on the lower two-thirds of the front of the legs. The lesions varied in size from a split pea to a filbert. There were none on the back of the legs. They did not distinctly originate in the hypoderm. Some were ulcerated and covered with scabs, like ecthyma; others were distinctly necrotic and showed deep craters. The sections showed marked infiltration around thickened blood-vessels, all the coats being involved. Numerous giant cells were present; they were large and more or less completely surrounded

by a ring of nuclei. "The resemblance to a tuberculous nodule modified by œdema was here so striking as to almost eliminate any doubt concerning the nature of the condition." No tubercle bacilli were found, and inoculation was followed by negative results.

The second was a boy, aged seventeen months, who had several tuberculous lesions on different parts of the body. Nodules were removed from the arms and leg. Sections showed typical tuberculous structure, and two tuberculous bacilli were found.

This subject has recently attracted a good deal of attention, opinions differing as to whether Bazin's disease is tuberculous or not. Tenneson was unable to come to a conclusion[6] as the result of his examination, and labelled it an unnamed granuloma, possibly tuberculous. Leredde[7] examined a recent nodule, found thrombosis of the blood-vessels, œdema and cellular infiltration around the vessels, but no giant cells, and no characteristic tuberculous grouping. Audry[8] was unable to detect any distinct inflammatory changes, and concluded that the condition was not tuberculous. Johnston[9] came to the same conclusion. He noted true caseous degeneration, but neither giant cells nor tuberculous formation. Inoculation experiments gave negative results. Thibierge and Rayant[10] noted changes in blood-vessels, ending in complete obliteration. They found numerous giant cells, but no tubercle bacilli. They believed, however, that they were warranted in assuming that the condition was tuberculous, and an inoculated guinea-pig died in twenty-four days of tuberculosis. Colcott Fox[11] found typical tuberculous structure, and an inoculated guinea-pig succumbed to tuberculosis. Philipson[12] found tubercle bacilli, and produced tuberculosis in a rabbit by inoculation. Whitfield[13] read at the Cheltenham meeting of the British Medical Association a paper on the subject. He said that on examining the literature it would be found that those cases which histological examination suggested to be tuberculous, had occurred in patients under the age of twenty-five, while those cases in which there was no evidence of tubercle had been in women over thirty. He related two cases illustrative of this. First, a girl, aged fourteen, a typical case, where histological examination showed a structure very typical of tuberculosis, though inoculation was negative. In the second, a woman, aged thirty-seven, there was definite evidence of circulatory weakness. The nodules when examined showed no granuloma, but merely phlebitis of the small venules, which suggested that there were two conditions generally grouped together under the same name.

Mantegezza[14] describes two cases in girls of ten and fifteen. In the former there was scrofuloderma of the neck, and in the latter the glands were swollen and the condition of the right apex was suspicious. He removed portions of the lesions and found meso- and peri-arteritis. The vessel walls were infiltrated with leucocytes, and in some of the vessels there was thrombosis in the centre. There were several giant cells, and the general architecture was that of tuberculosis.

Plates XXI and *XXII* are good representations of the malady. *Plate XXII* is the case of a young lady, aged twenty, who actually suffered from pulmonary tuberculosis with numerous bacilli, from which she has recovered. The case is described by Dr. Doughty in the *Scottish Medical and Surgical Journal*, April, 1900, and to him and the proprietors of the journal we are indebted for the illustration. *Plate XXI* is the case of a little girl, aged ten, in whom the standing occupation which is so generally associated with the disease was that of a school-girl. It seemed that to prevent "slouching" the class stood nearly all day at school. There was no other evidence of tuberculosis, and no definite history of that disease. In both cases the distribution of the eruption is characteristic, and both show particularly well the punched out (gummatoid) character of the lesions.

REFERENCES.—[1]*Gaz. hebd. de Méd. et de Chir.*, March 21, 1901 ; [2]*Hospitals Tidende*, Jan., 1900; [3]*Brit. Med. Jour.*, Sept. 28, 1901 ; [4]*New Zeal. Med. Jour.*, March, 1891 ; [5]*Brit. Jour. Derm.*, Oct., 1901 ; [6]*Ann. de Derm. et de Syph.*, July, 1896 ; [7]*Ibid.*, 1898, p. 895 ; [8]*Monats. f. Prakt. Derm.*, 1898, Bd. xxv, p. 481 ; [9]*Phil. Med. Jour.*, Feb., 1899 ; [10]*Ann. de Derm. et de Syph.*, vol. x, 1899 ; [11]*Brit. Jour. Derm.*, Nov., 1900, p. 382 ; [12]*Arch. f. Derm. u. Syph.*, Feb., 1901, p. 215 ; [13]*Brit. Med. Jour.*, Sept. 21, 1901 ; [14]*Ann. des Derm.*, vol. 91, part 6.

TUBERCULOSIS (Surgical). *Priestley Leech, M.D., F.R.C.S.*

Carless[1] reviews the modern treatment of surgical tuberculosis. He recognises what most surgeons have recognised, that in hospital cases and in children from the slums, conservative treatment has nothing like the chances of being curative that it has in those children who can be well fed and sent away to the sea. The "sanatorium" treatment of phthisis ought to be applied to tuberculous surgical diseases, but expense in most cases stands in the way. Carless's further experience in *chronic abscess* convinces him more and more of the value of **Tapping** abscesses, then irrigation with sterilised normal salt solution, followed by **Iodoform Injections.**

PLATE XXI.

ERYTHEMA INDURATUM

PLATE XXII.

ERYTHEMA INDURATUM.

Hoffa[2] states that spinal abscesses should only be opened when they persist long after the causative lesion has been cured; when they are threatening to burst; when they are directly threatening life; and when associated with high fever. In tuberculous articular disease the same principles are applied; the presence of matter is no indication for opening and excising the joint. In *tuberculous disease of bone*, conservative treatment should be first relied on, *viz.*, rest, pressure (as by Scott's dressing, probably venous congestion) and hygienic measures. Tuberculous deposit usually occurs towards the articular cartilage or in close relation with the epiphyseal cartilage. Operative measures must as far as possible protect these structures, and prevent their being involved to any great extent by the disease. If improvement, as evidenced by relief of pain, disappearance of tenderness and decreased swelling, is not taking place after a fair trial in such a place as the internal condyle of the femur or the lower end of the tibia, the surgeon should cut down and find the focus, even if the superficial bone has to be freely removed by the gouge in order to expose the disease. In other situations, where joints are not in danger, conservative measures may be tried until suppuration has occurred; then open, scrape with a sharp spoon, and disinfect the cavity with liquid carbolic acid and stuff it with iodoform gauze. These operative indications are more urgent if the family history is bad, or if the patient's general condition and surroundings are unsatisfactory.

Tuberculosis of the Tarsus.—Where the common synovial cavity of the foot has been invaded by tuberculous disease, or where the posterior tarsus has been extensively involved, **Amputation** is probably the only treatment; a Symes' amputaton if the ankle is intact. In the ankle-joint disease is recognised by the position of equinism taken by the foot, the swelling—mainly in front and behind each malleolus—and muscular atrophy of the calf muscles. Movements of abduction and adduction are not much interfered with. When the astragalus alone is affected, the limping and pain are much the same, but the equinus position is much less marked; the swelling is not so characteristic, and pain is marked over the bone. In the latter case try conservative measures; and if these do not succeed, remove the astragalus; excision of ankle in children gives awful results.

Tuberculosis of os calcis causes a swelling which involves the heel rather than the ankle, dorsi- and plantar flexion of the foot are not impaired, and the equinus position is not adopted; abduction and adduction are usually limited. Conservative treatment may succeed,

but if this does not cure, scrape away diseased tissue, the cartilage and periosteum being respected. Sometimes filling the cavity with bone chips will do, but it often fails.

Tuberculous Bursitis is reported on by C. H. Fagge.[3] Bursæ may be affected as follows: (1,) Bursal hygroma, the cavity being filled with fluid and melon seed bodies, and (2,) Fungating bursitis, in which the lining membrane is changed into pulpy granulation tissue, which usually suppurates and gives rise to a cold or subacute abscess. The first form is more chronic in its course, and more favourable as regards prognosis. When possible, excise; if this is impossible scrape and disinfect as in chronic abscess, or if an abscess form, **Injection of Iodoform,** in glycerin, may be tried. The bursa which is most frequently affected is the one beneath the gluteus maximus, and between it and the great trochanter. Fagge points out that the limb is abducted and everted as in the early stage of hip disease, but there is no flexion. Passive movements are possible; flexion, abduction, and eversion are entirely painless or only slightly felt.

Tuberculous Glands.—Some difference of opinion has long existed as to the treatment of tuberculous glands, particularly those in the cervical region. The tendency some time ago was to remove them, if they did not retrogress under suitable general and hygienic measures. Latterly the pendulum has swung somewhat in the other direction, but Von Noarden[4] says these glands may act as foci where bacilli may long remain latent, and transference of bacilli to other parts of the body may take place. He urges the value of the **Tuberculin Test** in cases where the tuberculous nature of the swelling is not certain, and incidentally suggests its value in distinguishing such a condition from sarcoma, Hodgkin's disease, etc. He has discarded all treatment except removal by operation as soon as possible.

Tuberculosis of the Testis.—The treatment of this condition has been and is hotly discussed; one side advocating total extirpation, the other conservative treatment, with opening and scraping of abscesses. Carless[5] discusses this subject, and Longuet[6] also gives a good paper on it. Tuberculosis of the testicle may develop as: (*a*,) Part of a generalised miliary tuberculosis; no treatment; (*b*,) A localised complication of pulmonary phthisis, where the diseased tissue can be removed by a conservative operation, unless the lung trouble is too far advanced; (*c*,) A chronic nodule (one or more) limited and well defined; treat by local incision, or excision without any question of removal of the whole organ; (*d*,) The commonest

type, a generalised solid infiltration of the whole epididymis. In this latter form the disease spreads after a time to the body of the testis, or more frequently along the vas deferens towards the vesiculæ, and the prostate, whilst localised abscesses may develop. Three methods of treatment are open: (α.) Purely medical treatment, which by itself is not very satisfactory; (β.) Radical treatment by castration. Recurrence in the other testicle is of frequent occurrence; removal of both testicles is unjustifiable in young persons, and it removes a valuable internal secretion, and often if logically followed out it means operations on the prostate and vesiculæ seminales, which mean serious additional risks; (γ.) Conservative measures, as in puncturing and scraping isolated tuberculous foci and total removal of the diseased epididymis. The epididymis can be removed *en bloc* without interference with the testicle or its vessels. The epididymis is severed from the testis close to the mediastinum, and the base is cleared from the other structures of the cord as high as possible. The advantages of this mode of treatment are as follows: (1.) The main focus of the disease is removed, and any disease that is left is more likely to be dealt with by natural processes, or removed later by a localised operation. (2.) The body of the testis is left as a generator of internal secretion. (3.) It is every bit as good a preventive of infection of the prostate and bladder as castration. Carless says that taking all this into account, castration for tuberculous disease of the testicle is unjustifiable, except in the latest stages, when the organ is totally disintegrated. Of course, all constitutional measures, *e.g.*, fresh air, tonics, cod-liver oil, etc., are to be employed as well. Lang[7] recommends that after removal of the epididymis, the testicle should be split down the back, and if no diseased foci are found stitched up again.

References.—[1]*Pract.* July, 1901; [2]*Cent. f. Chir.*, No. 17, 1901, p. 467; [3]*Guy's Hosp. Reports*, vol. iv, p. 190; [4]*Münch. Med. Woch.*, No. 4, 1900; [5]*Pract.*, July, 1901; [6]*Rev. de Chir.*, Jan., 1900; [7]*Deut. Zeits. f. Chir.*, May, 1900.

TYPHOID FEVER. *Edward Wilberforce Goodall, M.D.*

Etiology.—During the past year several papers[1] have been published upon typhoid fever amongst the troops engaged in the South African campaign, some of which throw fresh light upon the etiology of this disease. While there can be little doubt that contamination of water used for drinking played perhaps the most important part in the various outbreaks, yet it has been shown that other factors had to be reckoned with, *viz.*, dust containing dried fæcal matter, flies, and personal communication. The influence of

flies is indirect; coming from the excreta of the sick, they settle upon and contaminate the food intended for the healthy. Another interesting fact is the frequency of relapses and second attacks. The former are common enough in typhoid fever as we meet with it at home, but it has been a pretty general opinion that second attacks are rare; certainly that is the writer's experience. But there is no doubt that in the South African campaign this has not been the case, and second attacks have been very common. It is probably due to the fact that under the conditions existing during the war, exposure to the chance of infection has been very much more frequent than it usually is in this country. In many instances large bodies of men must have been exposed continuously for considerable periods of time.

This frequency of relapse and second attack would raise *a priori* doubt as to the efficacy of anti-typhoid **Inoculation**. As a matter of fact, there is divergence of opinion as to the value of this measure. Two main questions require to be settled: Firstly, is inoculation prophylactic at all? and if it is, to what extent is it effective? Secondly, if inoculation does not afford complete immunity, or if it does not afford any immunity at all, does it in any way modify an attack of typhoid fever? Cayley,[2] from the experience of the Scottish National Red Cross Hospital, inclines to answer the first question in the affirmative. The staff of this hospital went out to the Cape in three different sections. Of the sixty-one persons composing the first section, fifty-nine were inoculated and two were not, as they had previously had typhoid fever. Of the eighty-two composing the second, nearly all were inoculated; while of the twenty composing the third, all were inoculated. Cayley does not state precisely, but presumably all these persons were freely exposed to the chances of infection for a considerable length of time. None of the members of the first and third sections were attacked with typhoid fever, but of the second six were; of these six, four had not been inoculated. There were two deaths, one of the inoculated, another of the non-inoculated. It is worthy of note that fifty-seven members of the first section were inoculated twice on the voyage out, at an interval of about ten days. The remainder of the inoculated were inoculated only once, and the fatal case was one of these.

The figures given by Cayley, therefore, are very favourable to inoculation, especially if there has been a re-inoculation. The figures for the Portland (Tooth) and the Imperial Yeomanry Hospitals (Rolleston) are as follows: Of the forty-one members of the staff of the Portland Hospital, twenty-eight were inoculated and

thirteen were not; eight of the former and two of the latter were subsequently attacked with enteric fever, with one death, an orderly who had not been inoculated. The staff of the Imperial Hospital consisted of 150 persons, of whom thirty-five were inoculated and 115 were not; of the former six contracted enteric fever (17 per cent.), with no deaths; of the latter sixteen were attacked (13 per cent.), with two deaths.

These figures are not favourable to inoculation as a prophylactic. Comparing them with those given by Cayley, it is to be remembered that none of the members of the staff of the Portland and Yeomanry hospitals were re-inoculated.

Both Tooth and Rolleston are of the opinion that inoculation mitigates an attack of typhoid fever. Thus the former observd in the Portland Hospital that of fifty-four inoculated soldiers (officers and men) who were treated for enteric fever, four died, a mortality of 7·4 per cent.; while of 178 who had not been inoculated, twenty-five died, a mortality of 14 per cent. These figures do not include patients admitted to the hospital during the convalescent stage. Rolleston gives similar statistics from the Yeomanry Hospital, but he does not exclude convalescents. He sums up his experience as follows: "As far as these scanty figures go they point to the conclusion (1,) That anti-typhoid inoculation does not absolutely protect against a future attack of enteric fever; (2,) That when enteric occurs in an inoculated person there is, as a rule, an interval of at least six months; (3,) That inoculation protects against a fatal termination of the disease.

On the other hand, Washbourn (who acted as physician to the Imperial Yeomanry Hospital for upwards of fifteen months) writes as follows: "With regard to the value of inoculation, I am satisfied from clinical observation that it does not modify the disease. Mild, severe, and fatal cases occur among the inoculated and non-inoculated: and, as far as one can judge, with the same frequency. Whether inoculation diminishes the incidence of enteric fever can only be determined by extensive statistics. From my own personal experience I should not think that the incidence is diminished. It is possible that inoculation protects for a few months, and that it may thus be of some limited utility; but in view of the pain and inconvenience caused by inoculation, I cannot feel that it will be of much practical value in the future."

In last year's *Medical Annual* Professor Wright's figures referring to the inoculation of certain British troops in India were given. Wright[3] has published further statistics dealing with the results of

inoculations in the case of the 15th Hussars. Of 539 persons belonging or attached to this regiment, between October 22, 1899, and October 22, 1900, 360 were inoculated in England; of these two were admitted to hospital with typhoid fever, and one died; while of 179 non-inoculated, eleven got typhoid fever and six died. Thus the incidence of enteric fever amongst the inoculated was 0·55 per cent., and the mortality 0·27 per cent.; while amongst the non-inoculated the incidence was 6·14 per cent., and the mortality 3·35.

Quite recently Wright has published a most interesting and important paper[4] on "The changes effected by anti-typhoid inoculation in the bactericidal power of the blood." His observations go to show:—(1,) That when the amount of anti-typhoid vaccine employed in an inoculation causes very severe constitutional symptoms, a decrease in the bactericidal power of the blood of the person inoculated is immediately produced, together with an increased susceptibility of that person to typhoid infection; and that this condition may never be followed by one in which the bactericidal power of the blood is heightened or the resistance of the person to typhoid infection increased; (2,) That when the amount of vaccine causes well-marked (but not severe) symptoms, there follows immediately a decrease in the bactericidal power of the blood, and an increase in the susceptibility to infection; but that subsequently, probably within three weeks, the bactericidal power of the blood and the power of the individual to resist infection become increased; and (3,) That when the amount of vaccine is small enough to produce a constitutional disturbance which is not marked, the bactericidal power of the blood and the resistance to infection of the inoculated person are at once increased, without any intermediate stage of lessened power or resistance.

From these observations it follows that anti-typhoid vaccine should not be employed in large doses at all (that is, in doses which will give rise to severe constitutional disturbance); nor should it be used even in moderate doses unless an interval of several weeks is to elapse between the inoculation and exposure to infection. If immediate immunity is desired, a small dose, producing only slight constitutional disturbance, should be injected, to be followed by second injections with an increased dose of vaccine.

It is quite clear that the question of anti-typhoid inoculation is by no means a simple one. It has been shown by more than one observer that different strains of the bacillus typhosus abdominalis vary in respect to their virulence and other properties; thus the blood-serum of a person suffering from enteric fever, or who has

recently been inoculated with anti-typhoid vaccine, will produce a well-marked clumping with bacilli derived from one source, and yet little or no reaction with those derived from another. Apparently, therefore, an anti-typhoid vaccine ought to be prepared from those bacilli against which protection is desired; and if different strains of bacilli are concerned in one and the same epidemic (as is stated by some) then a correspondingly mixed vaccine would be required. With respect to Wright's conclusions given above, when we consider that the bactericidal power of the blood and the power of resisting infection varies in different individuals, and in the same individual from time to time, the determination of the proper dose of vaccine appears to be a somewhat difficult and uncertain matter.

A very interesting outbreak of typhoid fever, illustrating one of the means by which the disease may be introduced into a locality, has been recorded by Walker,[5] as occurring in the village of Long Orton, Hants. "In two houses taking their water supply from the same well, the inmates and their friends are known to have been, for twelve months at least, drinking water highly contaminated with sewage. No one suffered in consequence until after the arrival of a trooper invalided home from South Africa, convalescent from enteric fever. Immediately after his arrival the well became infected with the typhoid bacillus, as proved by the fact that between September 4th (the seventeenth day after the arrival of the trooper) and September 17th twelve individuals were laid up with typhoid fever, the only link between these twelve individuals being that each one of them had partaken of water from the polluted well. Other wells from the same village have been analysed and found to contain sewage, but no case of typhoid fever has resulted from the use of the water from these wells. No source for the typhoid infection of the well can even be suspected except the returned trooper, and the fact that a bacteriological examination of his urine was made a month after his return with negative result, does not invalidate the conclusion." Some of the patients were only visiting the houses in question, and developed their illness in other places several days after leaving Long Orton.

PATHOLOGY.—Russell[6] shows that leucocytosis is not necessarily a symptom of perforation of the bowel. Though leucocytosis is often present as a result of this complication, yet the converse may be the case, and the number of leucocytes may be diminished. In uncomplicated cases of typhoid fever examined by Russell the number of leucocytes varied between 2,000 and 12,000 per c.mm.

In an interesting paper in the *Johns Hopkins Hospital Reports*

CHART XIII.

TYPHOID FEVER WITH RELAPSE

Female, age 23.

Recovery

Temperature Centigrade

42° 41° 40° 39° 38° 37° 36° 35°

Date
Day of Dis. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 ... ... 36 37 38 39 40 41 42 43 44
Time M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E

Temperature (Fahrenheit)

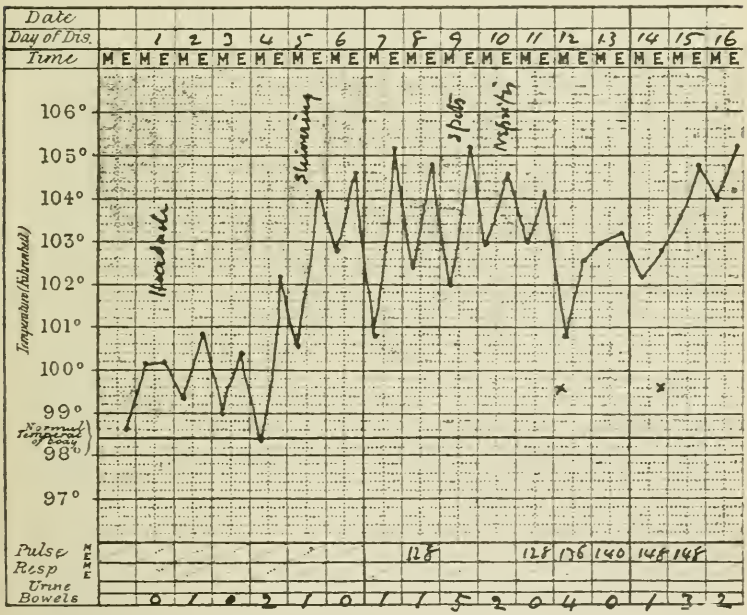
106° 105° 104° 103° 102° 101° 100° 99° Normal temperature 98° 97°

Pulse
Resp
Urine.
Bowels.

Widal R.U. deep dilution Fahrenheit

for 1900, Lyon shows from a careful study of twenty-nine published cases, together with one of his own, that *typhoid fever* and *malaria* may exist at the same time in the same patient. He further shows that so-called "typho-malarial fever" is either combined typhoid fever and malaria, or typhoid fever alone, or malaria alone. Washbourn, in the paper already referred to, states that he had under his care a patient who, during the incubation period of typhoid fever, suffered from a well-marked attack of remittent malaria, with parasites in the blood.

CHART XIV. Typhoid Fever, with Nephritis *Female, age 25.* *Peat's.*



It is not often that a chart of the temperature of typhoid fever is obtained that commences with the first day of the illness; so that the adjoining charts are interesting not only because they are complete, but because they illustrate the two different ways in which the disease shows itself.

Both the charts are those of typhoid fever occurring in hospital nurses, who, as far as could be ascertained, made complaint of illness as soon as they felt ill. In the case from which *Chart XIV* is taken,

indeed, the nurse was warded at the time, being convalescent from an attack of diphtheria when the symptoms of typhoid fever set in. In this case for the first four days the patient complained of headache, and her temperature was slightly raised. Though the temperature ran up to 102° F. on the evening of the fourth day, it was not till the fifth, when there was shivering and a temperature of over 104°, that the patient really felt ill. Had she been a person engaged in some daily occupation in the outside world, she would probably have dated her illness from this day. The eruption did not appear till the ninth day; on the tenth the urine gave marked evidence of nephritis, and the abdomen became somewhat distended. These conditions persisted till the fatal event, which occurred on the sixteenth day, the patient being comatose. In the other case (*Chart XIII*) the patient complained of headache, nausea, and fatigue, and her temperature was found to be 104.4° F. The eruption appeared on the third day. Although the invasion of typhoid fever is most often insidious (as in *Chart XIV*), yet not infrequently it commences suddenly (as in *Chart XIII*). This case was a mild one, lasting less than a fortnight; but a relapse occurred after a period of apyrexia of three weeks' duration—rather a long interval. The relapse, as is usually the case, was shorter and less severe than the primary attack.

TREATMENT.—A patient seen in the very earliest stage of the disease, when diagnosis is still doubtful, should be confined to bed. The usual symptoms at this stage are persistent frontal headache, pyrexia, and *malaise*; and whether or not there be any departure from the normal action of the bowels, no harm can be done by administering a mild purge. The diet should consist of milk and water, beef-tea, soup, etc. Usually the patient is disinclined for food.

When the disease is more fully advanced one of the most important questions is that of diet, all the more important in this affection because of the bowel lesion. One has to consider two points, the patient's capability of digesting his food, and the possibility of damage to the bowel by any particular article of diet; the first point is the most important, since the latter depends upon it. Now, in order to ascertain whether food is being digested properly, it is absolutely essential to inspect the patient's stools at least once in the twenty-four hours, a point rightly insisted upon by F. J. Smith in an admirable paper upon this subject.[7] If, the patient being on a milk diet, as is usual during the febrile period, curds are being passed, then that is an indication for further diluting the milk and giving less of it. Smith recommends, when undigested food is seen in the stools, the absolute prohibition of all food whatever for twenty-four

hours. But the writer thinks it better to alter the food either by dilution or predigestion (peptonising). We have said that milk is the usual diet during the febrile period and for some considerable time after. It should never be given pure, but diluted with water. The yolks of three or four eggs may be given in the course of the day, beaten up with the milk, or made into custard and broken up. Beef-tea, chicken-broth, and essence of meat may also be given.

Until recently it has been the usual practice to confine the typhoid patient's diet strictly to slops of the kind we have mentioned. But lately there has been some reaction in the matter of diet, and other foods are now allowed. Thus Smith, in the paper to which we have already alluded, permits bread and milk; rusks soaked in milk; milk pudding, with ground rice, sago, or tapioca, well cooked; also eggs lightly boiled or poached; and the writer agrees with him in this matter, at any rate in cases where the patient expresses a fancy for any of these viands. Cocoa, tea, and coffee may also be allowed. It is not advisable, however, to make any change from such a diet until the patient's temperature has been normal for at least a week, when a little pounded fish may be added, and later pounded chicken or meat. And so the patient may be gradually got on to more varied and solid diet. The patient may be allowed to drink freely of water at any stage of the disease, or to have lemonade or fruit-juice; but care should be taken to prevent his having any of the solid parts of fruit.

Stimulants should be given only in such cases as show signs of heart-failure, and in moderate quantity only. The best are **Alcohol** (brandy, port, champagne), **Ether, and Camphor.** The latter may be given as spirits of camphor (10 to 20 minims) or dissolved in olive oil (1 grain in 15 minims), subcutaneously. According to Stengel,[8] camphor acts as a nerve-sedative, and is therefore useful in delirious cases. **Strychnine,** $\frac{1}{60}$ to $\frac{1}{30}$ of a grain four times a day, may with advantage be given along with alcohol.

Pyrexia.—The application of water is better than the use of drugs. Sponging with cold or tepid water is preferred by some, but the writer is of opinion that wet-packs or baths are better. Commence with the pack, and if no improvement follows in two or three days employ baths. With respect to the temperature of the water for the bath or pack, that depends upon the time of the year and the condition of the patient; from 70° to 80° F. in summer, and 80° to 90° in winter. If there is any tendency to cardiac depression, the water should be from 90° to 100° F. The pack may be applied for several hours or days continuously.

Tympanites is at times a serious complication, as it embarrasses the respiration; **Ice** upon the abdomen will often relieve it. Smith advises 2 drachms of **Sulphate of Soda** in warm water every two hours until the bowels act freely, with **Salol** or **Chlorine Water. Turpentine** is beneficial when diarrhœa exists with tympanites.

Hæmorrhage.—Apply **Ice** to abdomen, wrap up limbs in cotton-wool, and inject **Morphia** and **Ergotine** subcutaneously. Later, hypodermic injection of **Saline Solution** is useful. Very little, if any, food should be given by the mouth.

Peritonitis.—**Ice** locally, **Opium** internally, with nutrient enemata The question is still being debated whether, and if so when, laparotomy should be resorted to. It has now been proved that when perforation has occurred certain cases may be saved by this measure; but so far most of the successful results have been obtained in cases where perforation has taken place during convalescence (See *Medical Annual*, 1900).

Delirium.—This will often yield under treatment by packs or baths; but drugs are often necessary, and **Opium, Chloralamide, Chloral Hydrate**, and **Bromide of Potassium** are the best.

Excessive diarrhœa is not very common. It may be caused by ulceration of the colon, and is best met with **Opium** by the mouth or rectum. F. J. Smith states that in one case the following enema proved successful: 2 drachms of tincture of opium: 1 ounce of subnitrate of bismuth, 2 drachms of powder of ipecacuanha, 1 ounce of starch, and hot water to 1 pint. If the motions are very offensive, some intestinal antiseptic, such as **Salol**, **Resorcin**, or **Carbolic Acid**, may be given.

It is hardly necessary to add that skilful nursing is highly desirable; indeed, no disease more repays the attention of the physician and the nurse. The prevention of bed-sores and the keeping the patient's mouth clean, devolve especially upon the latter. One of the advantages of the cold or tepid bath treatment is that with it the condition of the mouth so quickly improves. A good mouth-wash is the following: Tincture of myrrh, 10 minims; glycerin of borax, 1 drachm; water, to 1 ounce.

REFERENCES.—[1]Tooth, *Lancet*, March 16, 1901; Nicol, *Lancet*, April 6, 1901; Washbourn, *Brit. Med. Jour.*, April 20, 1901; Rolleston, *Ibid.*, Oct. 5, 1901; [2]*Brit. Med. Jour.*, Jan. 12, 1901; [3]*Lancet*, Feb. 9, 1901; [4]*Ibid.*, Sept. 14, 1901; [5]*Brit. Med. Jour*; Nov. 24, 1900; [6]*Boston Med. and Surg. Jour.*, April 18, 1901., [7]*Lancet*, Feb. 2, 1901; [8]*Therap. Gaz.*, Nov. 15, 1900.

TYPHOID FEVER IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. J. L. Morse[1] has studied fœtal and infantile typhoid, with the following conclusions: Except for the lessened exposure in the first year through food, there seems no obvious reason why typhoid should be less frequent in infancy than in later life. Nevertheless, judging from the small number of cases reported, it is less frequent. It may really be less frequent, or only apparently so because the disease is not recognised, being mistaken for other conditions. Bacteriological examinations in large series of autopsies on infants, and the use of the Widal serum test in large numbers of sick babies, seems to offer the best means for determining both the frequency and the character of the disease at this age. The accuracy of the diagnosis in many of the earlier reported cases must be regarded as very doubtful, and hence no satisfactory conclusions can be drawn from them. Analysis of the more recent and certain cases seems to show that the symptoms of infantile typhoid are essentially the same as in adults, but that the course is shorter and the mortality greater. These conclusions may be inaccurate, however, as it is possible that they are based on the severe cases alone, the milder cases having escaped notice. The pathological changes in the intestines are, as a rule, insignificant. The contrast between them and the severity of the general symptoms is striking. The probable explanation is that in the infant as in the fœtus, but to a less degree, the disease is a general rather than a local infection.

With reference to the serum reaction, he says that the serum reaction occurs in infantile as in adult typhoid. There are no data as to whether or not it occurs in fœtal typhoid. The agglutinating power may or may not be present in the blood of infants born of women with typhoid. If present, it is transmitted from the mother to the child through the placenta. It is possible, however, that it may be formed in the child in response to toxins transmitted through the placenta. The agglutinating principle can pass through the normal placenta. Part of it, however, is arrested in the passage. Whether or not it is transmitted seems to depend on the strength of the agglutinating power in the maternal blood, and the length of time during which the placenta is exposed to it. It may be transmitted to the nursling through the milk. It may appear in the infant's blood in less than twenty-four hours. It lasts but a few days after the cessation of nursing. It is always weaker in the milk than in the maternal blood, and always weaker in the infant's blood than in the milk. This weakening of the agglutinating power is due to the obstruction to its passage in the mammary gland and

in the nursling's digestive tract. The chief factor governing transmission is the intensity of the power in the maternal blood.

Morse further discusses[2] the value of the **Widal Reaction** in infancy. He concludes that it is present in at least 95 per cent. of all cases of typhoid fever. It seldom appears, however, before the second week of fever, and may be delayed even until convalescence. In a small number of cases it may never be present. In others it may be intermittent. As it seldom appears before the beginning of the second week, the test is of little value up to this time. As it often appears late in the disease, and as it may be present only intermittently, typhoid fever cannot be excluded by a single or even by repeated negative tests. Repeated negative tests, however, are very strong evidence against the existence of typhoid. A positive reaction, if the patient has not previously had typhoid, is almost certain proof of typhoid. A negative reaction, followed by a positive reaction, in a dilution of 1 to 50, is absolute proof of typhoid.

The Widal reaction occurs under the same conditions and with the same limitations in children as in adults. There is some evidence to show, however, that in them the reaction appears earlier, is feebler, and persists for a shorter time than in adults. It is of especial value in two ways in the diagnosis of typhoid in children: First, in ruling out many cases of gastro-intestinal disorders which might otherwise be mistaken for typhoid; and, second, in making a positive diagnosis possible in mild cases which might otherwise pass unrecognised.

Drs. Nobécourt and Bertherand[3] report two cases of typhoid fever in nurslings eleven and fourteen months old. These cases presented the symptoms of tuberculosis rather than of typhoid; but the serum of the younger, who died, gave a positive reaction with a typhoid bacillus culture in a dilution of 1 to 150; and the second case reacted with a dilution of 1 to 200. In both cases the positive result was obtained at the first examination, made four days after admission.

REFERENCES.—[1]*Arch. Ped.*, vol. xvii, No. 12; [2]*Ibid.*, vol. xviii, No. 5; [3]*Rev. des Mal de l'Enf.*, vol. xviii, No. 11.

TYPHLITIS. (See "Appendix.")

ULCERS OF THE LEG. *Priestley Leech, M.D., F.R.C.S.*

These, like the poor, are always with us, and one might almost say the same about new remedies. Kindler[1] has successfully treated chronic ulcers with **Hot Water,** with good results. He uses two litres (3½ pints about) of water as hot as could be borne, falling on to the ulcer from a height of six feet. These were repeated two or three times a day, and were followed by a dry rubbing with powdered

Iodoform or **Dermatol.** Chronic leg ulcers, the perforating lesions of tabes, progressive erosions of tertiary syphilis, and phagædenic chancroids, were thus cured in a very short time.

Michel[2] speaks well of **Unna's Paint** or dressing for chronic leg ulcers. (I have also found it very good.—P. L.) The paint is fluid when warm, but when cold looks and feels very much like white rubber. Its preparation is as follows :—Glycerin and water of each 10 parts ; gelatin and white oxide of zinc of each 4 parts. The gelatin must be of the best quality. Dissolve the gelatin in the water by means of a water bath, while hot add the glycerin, and finally the oxide of zinc, stirring vigorously and continuously till cold. Before applying it wash the leg thoroughly with soap and water, then dry it carefully and rub with alcohol. Then have the paint melted by putting the vessel containing it into another vessel with warm water. Paint the leg, including the ulcer, well over, except the toes, and then apply an ordinary bandage 2 to 2½ inches wide with open meshes ; cover the painted surface thoroughly with the bandage, but make no wrinkles or reverses ; if it cannot be applied further without a wrinkle, cut it off and start afresh ; be careful to close in the heel and ankle-joint well. Then apply another coat of paint over the bandage, and then another bandage on the top, fortifying any weak spot with an extra piece of bandage and more paint, so that there is exerted an even pressure all over. The dressing should be from three to five bandages in thickness, with a good coating of paint over all. An ordinary roller may be put on last until the paint is dry, when it may be removed. The dressing should wear from four to eight weeks. If the dressing should become loose, remove and apply another. If the ulcer secrete pus, a wet spot will show through, when a window may be cut and the sore cleaned and dressed with gauze, etc., and a bandage to keep it in place. This method is also applicable to many cases of chronic eczema and œdema.

[In ulcers of the leg, one or two layers of bandage and paint with removal in a week's time, the ankle (unless the ulcer is near it) not necessarily being included, have given good results in out-patient practice.—P. L.]

REFERENCES.—[1]*Cent. f. Chir.*, No. 10, 1900 ; [2]*Chicago Clinic*, No. 8, 1900.

URETER (Operations on the). *E. Hurry Fenwick, F.R.C.S.*

1.—*Total Extirpation of the Ureter.*—From his experience in two cases of ureterectomy in pyonephrosis, Willy Meyer has been induced to contribute an article on this subject.[1] The operation may be

performed simultaneously with nephrectomy (primary), or at some later date (secondary). The secondary operation is more often performed than the primary, for the reason that the primary requires more time, and therefore a longer anæsthesia, both important factors in this particular operation ; and further, in cases of suppurating or tubercular kidney, it will often render impossible the task of maintaining the large retroperitoneal wound in an aseptic condition.

Inasmuch as the operation is always simultaneous with or consecutive to nephrectomy, the same pathological condition that had induced the surgeon to extirpate the kidney will be found to exist in the ureter.

Conservatism has now taken a firm hold on renal surgery. To-day the kidney is only removed at the first operation in cases of tumour, primary tuberculosis, and exceptionally severe cases of suppuration ; and even in these affections a few authors have recently argued against sacrificing the entire organ. These three indications for primary nephrectomy, recognised to-day by the majority of surgeons, should be reviewed with regard to their influence upon a probably following total extirpation of the ureter.

(*a*,) Tumour of the kidney : Meyer has not been able to find a single case of total ureterectomy for carcinoma or sarcoma of the kidney.

(*b*,) Tuberculosis of the kidney : Meyer has performed fourteen nephrectomies for tuberculosis, but did not remove the ureter in any of the cases. In all these cases the wound closed without leaving a sinus, although scraping and proper treatment of the wound became necessary now and then toward the end of the convalescence. If materially infiltrated, the proximal end of the ureter was resected as far down as possible ; if not especially affected by the tuberculous process the tube was simply cut off below the kidney, and dropped back into the retroperitoneal space. He practised the latter procedure up to some years ago, but now he invariably sears the lumen of the distal end with a Paquelin cautery, and then ties it with catgut. Primary total ureterectomy for tuberculosis is rarely indicated. Kelly of Baltimore, Israel of Berlin, and a few others have reported such cases. Here it was seen during nephrectomy that the ureter was seriously involved, and partial resection would have been equivalent to an incomplete operation. Meyer believes that in the majority of cases where an early diagnosis has been made and nephrectomy performed, there will be no necessity for removal.

(*c*,) Pyonephrosis and calculous pyonephrosis: Meyer has twice removed the entire ureter in cases of this nature. In one there

was a narrow stricture at the junction of the middle and lower thirds, and a jagged calculus lay at the vesical termination of the ureter. In the other case the kidney had been removed by another surgeon about four and a half years before.

Pryor[2] has removed the entire ureter in a case of tuberculous nephritis in a woman. He is a strong advocate of the abdominal route in nephrectomy, and considers the removal of the ureter by any other method as a "blind and clumsy" procedure. In his case the abdomen was opened and the right kidney found enlarged, nodular, and firmly fixed, while the ureter was prominent as a hard cord beneath the peritoneum. The right kidney was first removed, and the ureter was then freed from the peritoneal covering for its upper half. It was then traced in its pelvic course by pulling upon the free portion. When the pulsations of the uterine artery were felt, the peritoneum in front of the vessel was incised, and the ureter drawn through. The ureter was then cut off three-quarters of an inch from the bladder, and a long probe passed along the lumen of this stump into the bladder. The end of the ureter was now sutured to the eye of the probe, and the instrument pulled out of the urethra, thus turning the ureter inside out into the bladder. The probe was then bent over the pubes. In the third week the ureter sloughed off and the probe was drawn out.

2.—*Ureteral Anastomosis.*—Kelly of Baltimore[3] recently read a paper on the subject of ureteral anastomosis before the American Medical Association. He includes two operations under this head, *viz.*, uretero-ureterostomy and uretero-cystotomy. In the first a segment of the ureter is sacrificed and the ends brought together; in the second the vesical end of the ureter is sacrificed, and the upper end is implanted into the bladder.

Ureteral anastomosis is a difficult and delicate operation. It is usually required for accidental injury to the ureter during pelvic operations. A portion of the ureter is removed by design where it is involved in a carcinomatous mass in the broad ligament. Kelly gives a valuable piece of advice when he recommends the surgeon to make sure that the ureter is performing its function before embarking upon the operation of ureteral anastomosis. Success in the operation depends upon the accurate union without injury of the delicate ureteral structures. This is rendered extremely difficult on account of the flaccidity of the tube, and in some cases by the difference of calibre between the two ends.

Kelly has introduced an instrument which facilitates the suture of the ureter. It is a guide resembling a hammer, the handle of

which is attached to one end of the cross-piece instead of at the middle. The head is 4 cm. long and has a rounded free end. Near the end is a groove to receive a suture tying the ureter on to the instrument. A fine silk suture is passed through the under surfaces of the ureteral ends and is tied, bringing them accurately together. A longitudinal opening is made two centimetres from the end of the upper ureteral segment. The rounded head of the guide is introduced into the slit and passed downwards, emerging from the cut end, and is inserted into the lower end of the ureter, and the latter is loosely tied in the groove. The cut ends of the ureter are now carefully sutured over the guide, which may be rotated as required. The ligature around the guide is now cut, the guide withdrawn, and the slit is closed by fine sutures.

A somewhat similar method is used in performing uretero-cystotomy. Here an incision is made on the peritoneal surface of the bladder and the instrument introduced, and its head passed through the bladder-wall into the lower end of the ureter.

This method of Kelly's is only original in its application to ureteral surgery. As long ago as 1898, Halsted (*Phil. Med. Jour.*, April 2) used a series of hammer guides to facilitate in like manner the closure of wounds in the common bile duct or cystic ducts, where the same difficulties of manipulation are experienced.

3.—*Anastomosis of Ureter and Intestine.*—At the American Medical Congress of May, 1900, Peterson,[4] of Chicago, presented a paper on uretero-intestinal anastomosis. He came to the following conclusions :—

(*a*,) The primary mortality of uretero-intestinal anastomosis, both in experimental work on animals and in man, is exceedingly high.

(*b*,) The best technique is that requiring the least amount of suturing of the ureters themselves.

(*c*,) All efforts to prevent ascending renal infection in animals, as in man, when the ureter has been implanted without the vesical orifice, have proved futile.

(*d*,) It is impossible to tell in advance the extent of the infection which will result from uretero-intestinal anastomasis. The patient may die in a few days of a pyæmia, or in a short time of pyelonephritis, or in rare cases may recover from the infection with resulting contracted kidneys.

(*e*,) Hence the operation is unjustifiable either for the purpose of making the patient more comfortable, as in extrophy of the bladder, vesico-vaginal or uretero-vaginal fistula, or for malignant disease of the bladder.

(*f*,) The results of uretero-intestinal anastomosis through the formation of vesico-rectal fistula, have not been favourable up to the present time.

(*g*,) The success of Frank's experimental work on vesico-rectal anastomosis, justifies the expectation that the future results of this operation will be more satisfactory.

(*h*,) The primary mortality of uretero-trigono-intestinal anastomosis, is low for an operation of this magnitude.

(*i*,) While it cannot be denied that ascending renal infection may occur after this operation, the infection, as a rule, is of such a type that the chances of the individual overcoming it are good.

(*k*,) Hence the operation of implanting the vesical flap with its ureteral orifice into the intestine is a justifiable surgical procedure.

(*l*,) There is no valve guarding the vesico-ureteral orifice, nor do the circular muscular layer of the ureter nor the bladder muscle themselves act as a sphincter.

(*m*,) It has been abundantly demonstrated by experimental and clinical work, that the rectum tolerates the presence of urine, and acts as a good substitute for the bladder, and that good control over the anal sphincter will be maintained.

REFERENCES.—[1]*Med. News*, Sept. 22, 1900; [2]*Amer. Jour. of Obst. and Dis. of Women and Children*, April, 1900: [3]*Lancet*, Nov. 3, 1900; [4]*Brit. Med. Jour.*, Jan. 9, 1900, epit.

URETHRA (Disorders of).

J. W. Thomson Walker, M.B. Ed., F.R.C.S.E.

Prolapse of the Urethral Mucous Membrane in the Female.—Voillemin,[1] in a thesis (Paris, 1900) on this subject, attributes the condition to unusual laxity of the sub-mucous connective tissue. The mucous membrane slides downwards till it appears at the meatus as a more or less circular pad.

The condition is met with in children of two to twelve years, and in women of fifty to seventy-five. The predisposing causes are frequent child-bearing, senile involution, and other causes which lead to weakening of the tissues. The most common exciting cause is straining in coughing, defæcation, and micturition. Vulvo-vaginitis, urethritis, and injury seem to have some influence in causing this disease. The first symptom is dysuria, and a little red projection at the posterior edge of the meatus is then detected; sometimes a second lies at the anterior edge, and later a complete circle of mucosa comes down. There is pain on micturition, on walking, and on connection. Slight bleeding may take place, and if a portion of the mucous membrane slough, this may be severe.

At an early stage reduction of the prolapse is often effective, if a compress be applied and the patient kept at rest. Astringent lotions may prove beneficial. Cauterisation is less satisfactory, and ligature is not to be thought of. The thermo- or galvano-cautery may be used for the removal of the mass, but excision with scissors, followed by suture of the edges of the mucous membrane to the border of the meatus, is the best proceeding for the permanent cure of a large prolapse.

Treatment of Stricture of the Urethra.—Mr. Reginald Harrison,[2] in a paper read before the International Congress of Medicine in Paris (1900), considered the remote results of structural lesions in urethro-stenosis. He examined, during life and after death, the following varieties of wounds: (1,) Lacerated or contused wounds, such as follow methods of divulsion; (2,) Incised wounds from within as illustrated by internal urethrotomy; and (3,) Incised wounds from without as in external urethrotomy or perineal section.

Mr. Harrison came to the following conclusions:—

(1,) That in peri-urethral strictures of the deep urethra the effects of divulsion may be limited to rupturing the dense stricture bands in the sub-mucosa of the urethra, whilst the mucous membrane itself escapes any serious injury or laceration, and is merely restored by stretching to its original dimensions. Here a permanent cure may result. If the mucous membrane is the seat of stricture, it is necessarily torn or lacerated, and the operation is liable to be followed by a stricture of the most recurrent and contractile form.

(2,) That where the entire thickness of a stricture can be included within an incision of moderate dimensions made by an internal urethrotome, the normal calibre of the urethra may be completely and permanently restored. The absence of recurrence is not necessarily dependent on the use of a bougie, though this should always be advised as a precautionary measure.

(3,) That in multiple strictures or strictures of the deep urethra of considerable dimensions, either in length or thickness, the tendency to re-contraction after internal urethrotomy is frequent.

(4.) That the liability to the poisonous effects which unprotected and confined urine is capable of exercising, both on the body generally and on the tissues in contact with it, is greatly diminished where drainage and irrigation render these conditions of the urine unlikely.

(5,) That there is direct evidence to show that the tendency to re-contraction and recurrence of stricture after internal urethrotomy, is largely diminished by the concurrent employment of systematic and efficient urine and wound drainage, such as the combination of external urethrotomy or perineal section affords.

Bennett[3] considers that the introduction of the largest sized catheter that the urethra will admit is an essential detail after internal urethrotomy. The instrument should lie free and easily moveable to and fro in the urethra. Should it be grasped firmly, the defect is due either to the stricture being insufficiently divided, or the instrument being larger than the meatus will carry comfortably. If the meatus is already slit, any holding of the instrument will be due to imperfect division of the stricture; but if the meatus has not been slit, urethral spasm will very frequently occur, no matter how free the division of the stricture may have been. Such spasm will, as a rule, entirely disappear when the meatus has been slit sufficiently to allow of the instrument being passed freely through it.

Dr. Chassaignac[4] records two cases as examples of the results he has obtained during the last four years with electrolysis in urethral stricture. In one case a tight stricture was opened (sic) by means of the electrolyzer at one sitting, and a few days after a large bougie was passed without difficulty. Four years later the same size of bougie passed easily. The other case was similar in many respects.

Dr. Chassaignac's results are entirely at variance with those obtained by other surgeons, for it has been found that when an electric current has been repeatedly passed through a stricture, any dilatation obtained might equally well result from the presence of the instrument alone, without the aid of the electricity. And further, when an electric cautery has been used to sever a cicatricial band in the urethra, the scar obtained on healing of the wound formed a more formidable obstacle than the original stricture. The case quoted above reads remarkably like a divulsion of the stricture by the electrode.

Urethral Pouch in the Male.—An interesting and rare form of urethral pouch is recorded by Pouly[5] from the practice of Rollet, of Lyons. The patient was a man, of sixty-four years, who had never suffered from gonorrhœa. At the age of thirty-five he received a blow on the perineum which ruptured his urethra. This was followed by stricture, and twenty years later internal urethrotomy was performed. Three years before admission to hospital three large calculi were removed by suprapubic lithotomy. A year later the patient broke a catheter during use, and the end of the instrument, two inches in length, was extracted by external urethrotomy. Twelve months later he noticed that a small tumour formed at the peno-scrotal angle during micturition. It increased steadily as the bladder emptied, and then gradually decreased at the end of micturition. The swelling was transparent, fluctuating, and free from tenderness

or any sign of inflammation, and was not adherent to the skin. The urine expressed from the sac was identical with a sample taken at the beginning of micturition. The prostate was enlarged. A full-sized catheter could be passed into the bladder without resistance except at the prostate, and on withdrawing the instrument the end could be manœuvred into the pouch. The patient showed signs of chronic uræmic poisoning, and the urine contained pus.

On operation it was found that the pouch was formed by a dilatation of the floor of the urethra a little under two inches in its long axis. The canal was closed around a No. 15 Nelaton's catheter by three layers of suture. The patient died of uræmia on the eleventh day after operation. There was suppuration in both kidneys.

REFERENCES.—[1]*Brit. Med. Jour.*, Nov. 10, 1900; [2]*Lancet*, Aug. 11, 1900; [3]*Pract.*, 1900, p. 621; [4]*New York Med. Jour.*, July 7, 1900; [5]*Lyon. Méd.*, Feb. 4, 1900.

URINE, The. *Prof. Robert Saundby, M.D., LL.D., F.R.C.P.*

Urinary Pigments.—In the Bradshaw lecture for 1901, Dr. Archibald E. Garrod dealt with those urinary pigments which he considers to be present in normal urine, *viz.*, urochrome, urobilin, hæmatoporphyrin, and uroerythrin. Of these, according to the lecturer, urochrome is the most abundant, and to it the familiar yellow color of normal urine is probably entirely due. Urobilin occurs in very small amounts, generally in the form of its chromogen, and has no influence upon the colour; but in many morbid conditions its quantity is greatly increased and it is present to a large extent as formed pigment. Hæmatoporphyrin is present only in traces in normal urine, but often in larger quantities in disease, although very seldom in sufficient abundance to have any effect upon the color. Uroerythrin is not strictly a normal urinary constituent, but appears in small amounts as the result of very slight deviations from health. It is chiefly conspicuous as the colouring matter of the common pink urate sediment.

Urobilin has attracted more attention than the other members of the group, and has given rise to a literature which far exceeds in bulk that of all the other urinary pigments put together. Various theories to account for its origin have been maintained. There is no doubt that it is formed in the intestine from bile pigment under the influence of bacterial activity, and is absorbed from the intestine and excreted in part in the urine, while part seems again to pass by way of the liver into the bile. The formation of urobilin or its chromogen can be shown to depend upon the presence of bile in the intestine, of bacteria, and of sufficient time to allow bacterial activity

to develop ; where the access of bile to the intestine is cut off, as in obstruction of the common duct, or where the bile is hurried rapidly through the intestine, as in diarrhœa, or where bacteria are absent, as in the intestine of the new-born infant, the formation of urobilin is prevented.

Hæmatoporphyrin is present in minute traces in normal urine, and has been found by MacMunn in the pigments of certain invertebrata, some of which have no hæmoglobin in their blood. It is found in larger quantities in cases of poisoning by sulphonal, where the urine has a deep port-wine color ; but, according to the lecturer, this color is due rather to other pigments than to hæmatoporphyrin. He believes that this substance has hæmoglobin, and possibly the histohæmatins of MacMunn, for its parents, and is isomeric with bilirubin. He does not attribute much importance to food as a possible source of this pigment, nor do his investigations suggest that there is much necessary connection between excessive hæmolysis and excess of hæmatoporphyrin. He gives details of blood counts and hæmoglobin estimates in several cases of hæmatoporphyrinuria due to sulphonal, in which there was no evidence of marked hæmolysis. Traces of hæmatoporphyrin are found in the intestine, but it is probable that it is formed in the liver, as there seems to be some connection between degeneration of the liver substance and increase of this pigment. Its relation to lead poisoning is also probably due to the action of lead upon the liver.

Urochrome is a pigment as to the relations of which little is known. The lecturer disputed the view of Thudichum that urobilin is a decomposition product of urochrome. He believes that the formation of urochrome is quite independent of urobilin, and although it is probably a derivative of hæmoglobin, there is as yet no evidence to show how or where it is formed. This pigment has no characteristic spectrum, and the want of a satisfactory method for its estimation makes it difficult to form even a rough notion of the quantity present in morbid urines, in which the colour is often masked by that due to other pigments.

Uroerythrin is in even a still more unsatisfactory position as to our knowledge of its origin and relations, although its power of imparting colour to urate sediments caused it to be one of the first urinary pigments to attract attention. It is probably not derived from hæmoglobin, nor can it be obtained from the fæces. It is increased in the urine of patients suffering from hepatic disease, such as cirrhosis, carcinoma, and passive congestion. It is excreted in large quantities in certain febrile disorders, *e.g.* such as acute

rheumatism, pneumonia, and also in gout, while its amount in cases of liver disease is greatly diminished when the patient is put upon milk diet.

The lecturer, while urging the need for greater attention and for the closer study of these subjects, admitted that they do not offer much to make them of present clinical importance.

Oxalic Acid.—The origin of oxalic acid in the body still remains an obscure problem. Some have regarded it as due to imperfect oxidation of nitrogenous matter, while others see in it merely the oxalic acid taken as food. Lommel[1] found that when oxalic acid is given by the mouth, only a part of it can be recovered from the urine and fæces; it is therefore probably destroyed in the intestine through the action of bacteria, but the oxalic acid of the urine is only in part formed from the oxalic acid of food. Food rich in nuclein and gelatin increases the excretion of oxalic acid, but this does not stand in direct relation with the destruction of albumen.

Hæmoglobinuria.—Hæmoglobinuria *a frigore*, is due to the breaking down of the blood corpuscles in the blood, in consequence of the hæmolytic action of some poison which has passed into the circulation, but hæmoglobin may be present in the urine from the normal hæmolytic action of this fluid becoming exaggerated. Normal urine is hæmolytic, and ultimately destroys the blood corpuscles, causing them to shed their hæmoglobin and to appear as colourless discs, but the process is a slow one, and the colourless discs may be seen at least for some days. It is characteristic of hæmoglobinuria that no discs can be seen, and that the blood corpuscles have been completely destroyed. In some cases of nephritis the urine may possess this hæmolytic power so as to be capable of destroying, not only the blood corpuscles of the individual affected, but those of healthy persons. Such a case was reported by Pagniez[2] and another by Tuffier and Milian.[3] In the latter case, which was one of acute nephritis following a burn, the hæmolytic power of the urine disappeared when heated to 120° C., but reappeared with exposure to fresh air. In this case, too, it was proved that there was no free hæmoglobin in the blood serum.

Sources of Indican in the Urine.—According to Enrico Reale[4] a urine which gives no indication of indican when treated with a solution of calcium chloride in hydrochloric acid in the cold, will give a marked reaction if the urine be boiled after the addition of the reagent. He also observed that while the urine is boiling there is at first a separation of blue indican, but which shortly changes to a pink colour, and sometimes is even transformed into a colourless

substance. He thinks these facts suggest the presence of an indican-forming substance in the urine which is very unstable. The most obvious suggestion is a glycuronic combination (indoxyl-glycuronic acid), which is rendered probable by the fact that these urines ordinarily belong to lithæmic subjects, and react more or less to the reduction test. This hypothesis was demonstrated to be true by the author's researches, which proved the presence in such urines of a substance which could be precipitated by barium chloride, and which proved on analysis to be a barium salt of glycuronic acid.

Bacteriuria.—According to the experiments of Metin,[5] bacteria injected into the veins are not eliminated by either the bile or the urine unless they set up lesions in the liver or kidneys, so as to produce an admixture of blood with these secretions. The animals experimented upon were rabbits and guinea-pigs, and the bacteria used were cultures of B. subtilis, staphylococcus aureus, B. anthracis, and other organisms.

The Phenyl-Hydrazin Test for Sugar.—Leslie Eastes[6] considers the usual statement that this test can be successfully performed with 5 c.c. of urine is only true when the specimen contains more than 20 per 1,000 of sugar. Where it contains less he recommends the following method :—

Take of the filtered urine about 60 c.c. in a beaker of 100 c.c. capacity. Add 1 grain of sodic acetate and rather less of the phenyl-hydrazin hydrochlorate. Stir with a glass rod, which remains in the beaker throughout the entire operation. The beaker is then placed on a water bath, and the urine gradually evaporated down to 10 to 15 c.c. During this process the beaker should be occasionally removed, and any sediment collected on the sides of the vessel scraped off with the glass rod into the fluid. In this way none of the sugar is left by evaporation on the sides of the beaker. When reduced to the bulk above indicated the flame should be removed, and the beaker remaining on the bath, the whole should be allowed to cool. This will take two hours or longer. When quite cold stir up all sediment, and with a pipette place some on a glass slide for microscopical examination. Osazone crystals will have formed if there is 1 part per 1,000 or more of sugar in the urine. If no crystals are found, it may be safely concluded that sugar (that is, glucose) is absent.

He thinks lactose may be differentiated from glucose by the different shape of the crystals ; those of lactosazone being usually short, broad, curved in the longitudinal plane, pointed at one or both ends, and showing less tendency to sheaf or rosette formation than crystals of glucosazone.

The above statement, that 5 c.c. are insufficient for demonstrating the presence of sugar by this test when small quantities only are present, is directly opposed by Mr. Walker Hall,[7] who says: It appears that 0·5 gram. (7 to 8 grains) of phenyl-hydrazine, 1·5 gram. (23 grains) of sodium acetate, and 5 c.c. (2 drachms) of urine, give the most rapid and satisfactory results with glucose, but that 10 c.c. should be taken if the solution contains maltose or lactose. These quantities suffice with a solution of 0·1 to 5 per cent. Mr. Hall recommends that the operation should be performed in the following manner: Before adding the urine the reagents should be dissolved by gently warming in a few centimetres of water. When the urine is added the mixture is brought to the boiling point, and there maintained for fully three minutes with strong, and five minutes with weak, solutions. After some practice, however, a change in the manner of ebullition will be noted as an indication when to stop the boiling. The test tube need not be placed in cold water, it should simply be placed at rest. Within two to ten minutes the crystals will be formed.

A very delicate reaction, based upon an extension of this test, is suggested by Prof. Riegler[8]: 0·1 gram. of phenyl-hydrazine hydrochlorate and 0·5 gram. of sodium acetate are dissolved in a few drops of water, and then boiled during several seconds with 1 c.c. (20 drops) of urine or sugar solution; 1 c.c. (20 drops) of caustic soda (10 per cent) is added, and within one second to five minutes a deep red-violet colour appears. If performed in a porcelain dish instead of a test tube, the colour change is well marked, and is developed in rings or streaks that are both striking and distinctive. From careful examination, he concludes it to be specially sensitive, and quickly responsive to 0·01 per cent of glucose in solution.

Test for Bile Acids.—The detection of bile acids in the urine is not often attempted for clinical purposes, on account of its difficulty. Such methods as those of Pettenkofer and Salkowski require separation of the acids by precipitation and washing before application of the test; therefore, any plan capable of being readily and quickly applied, and which should also prove trustworthy, would be valuable. Some years ago, in the second edition of Landois and Stirling, mention was made of a test discovered by Prof. Matthew Hay, of Aberdeen, performed by sprinkling a few grains of **Sublimed Sulphur** upon the surface of the urine; when bile acids are present the grains of sulphur sink, instead of floating as they would otherwise do. This behaviour is due to an alteration in the surface tension of the fluid caused by the presence of bile acids. The note in Landois and Stirling,

unfortunately mentioned "sublimed or precipitated" sulphur, but Prof. Hay desires it to be known that he recommends only sublimed sulphur. Chauffard and Gouraud[9] have tested this method with different solutions, both aqueous and urinary, of glycocholate of soda, and they have satisfied themselves that the reaction gives a positive result with a solution of one twenty-thousandth part in distilled water, or with so little as a forty- or fifty-thousandth part in urine, and they believe it is capable of being employed to distinguish between bile salts and pigment. Clinical experiments were equally conclusive, as the reaction was not only positive in seven cases of jaundice of different kinds, but also in the urine of twenty out of fifty persons taken at hazard, and in these twenty patients both the spectroscope and Salkowski's procedure showed small quantities of biliary pigment to be present. They regard the reaction as very much more successful than the methods of Gmelin and Pettenkofer, and as exact as that of Salkowski, although much more simple than the last. The only precautions necessary are: To use fresh urine, or if it must be kept to add a solution of cyanide of mercury, which while exercising considerable antiseptic power has no effect upon the precipitation of sulphur; in addition, the reaction must be considered as over at the end of five minutes, as the fall of the sulphur after this period has no value; finally, the method should not be used in patients who are taking certain drugs, such as phenol and chloroform. Prof. Hay also points out that the urine must not be warm.

REFERENCES.—[1]*Deut. Arch. f. klin. Med.*, bd. 62, s. 599; [2]*La Sem. Méd.*, May 1, 1901, p. 146; [3]*Ibid.*, 1901, p. 342; [4]*Riforma Med.*, May 9, 1900; [5]*Ann. de l'Inst. Pasteur*, June 25, 1900; [6]*Brit. Med. Jour.*, Feb. 23, 1901, p. 454; [7]*Ibid*; [8]*Deut. Med. Woch.*, 1901, No 3.; [9]*Jour. de Phy. et de Pathol. gén.*, May, 1901.

URTICARIA. *Norman Walker, M.D.*

Wolff[1] says that urticaria can be cured very rapidly by the administration every three hours of about 60 grains of **Phosphate of Sodium.**

Bettmann[2] relates two cases in which urticaria was a prominent symptom of commencing scleroderma. The wheals were peculiar in that they took several minutes to develop, and lasted an extraordinarily long time, sometimes as much as five or six days.

Glover[3] reports a case of severe urticaria caused by the use of **Formalin** in a hair lotion. There was no local dermatitis.

REFERENCES.—[1]*Jour. de Méd. de Paris*, Feb. 25, 1900; [2]*Berl. klin. Woch.*, April 8, 1901; [3]*Brit. Jour. Derm.*, April, 1901.

UTERUS (Cancer of). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

ETIOLOGY.—No advance of any importance has yet been made in the subject of the origin of cancer; the view that it is due to pathogenic blastomycetes receives some support from the observations of Leopold,[1] who finds that in a fresh specimen of a cancer of the ovary, blastomycetes may be found, and that pure cultures of them may be made from fresh carcinomatous tissue. If this culture is injected into the testicle of a rat, the animal succumbs, enlarged nodes are found in profusion in the peritoneum, and in the fresh as well as in the hardened tissues, masses of blastomycetes are seen. He does not doubt that these organisms may be etiologically responsible for malignant growths in man, and that the growth can be inoculated from man to animals, the latter dying from a malignant neoplasm.

DIAGNOSIS.—Handfield-Jones,[2] in discussing the diagnosis of cancer of the body of the uterus, concludes that no one sign, such as hæmorrhage or pain, or even microscopical examination, is absolutely reliable. In the case of scrapings, the superficial tissue only may be removed, and the deep part of the gland is not obtained; but later scrapings, when the disease is more advanced, are more reliable. On the whole he is inclined to rely on the complete picture of a case as indicated by clinical signs; and of these he believes that rapid increase in the size of the body of the uterus is the most valuable sign in determining the need for extirpation of the whole organ. The conditions which most closely simulate malignancy, are senile endometritis and benign adenoma; he points out that a stage of the latter condition almost always precedes carcinoma.

Cancer of the cervix is more easily recognised in the early stage than cancer of the body, if the patient will seek advice. The signs to be relied on for early diagnosis are *not* excessive pain, foul discharge, and cachexia; these are rather indications that the disease has got beyond the reach of surgery. Irregular hæmorrhage, though slight, especially when it occurs after the menopause, is the most important sign that should lead to an examination, and allows a hope that the disease may be in a stage early enough for removal. McCann[3] points out that in cases of cancer of the cervix the examination of the vaginal aspect of the cervix is often insufficient to establish the diagnosis, because in the form that begins in the cervical canal, extensive ulceration may take place before the disease shows itself at the external os. I met with a case illustrating this point; for on the surface, the growth appeared to be so early as to give the impression that the case was a particularly favourable one for

radical extirpation; and yet, on separating the bladder in front, it was found that the anterior wall of the cervix was almost entirely destroyed by the growth. McCann remarks, when discussing the diagnosis of cancer from cervical erosions, than an early cancerous growth has a sharp, prominent, clearly-raised, and somewhat infiltrated margin; the base is irregularly nodulated, it is raised above the surface, and is yellowish-pink in colour. The erosion is bright red, tears very readily, and has no hard or infiltrated edge.

TREATMENT.—(1.) *Palliative Treatment of Inoperable Carcinoma.* By "inoperable" is of course meant a case that does not admit of radical operation. Kustner[4] says that one of the most trying symptoms of the advanced stages of uterine carcinoma is the offensive and penetrating odour which is evolved. In order to palliate this condition, he proposes to close the vulvar orifice, and by means of a vagino-rectal **Fistula** divert the discharge into the rectum, where it may be more under the influence of the will, and regularly and effectively discharged. It seems doubtful whether this plan is at all likely to become popular, as there are much more satisfactory ways of preventing the offensive discharge than by turning it into the rectum. Stapler[5] criticises this and other proposed methods, such as Jonnesco's plan of ligaturing the uterine arteries (see *Med. Annual*, 1901, p. 568). He advocates the older plan of cauterizing by means of **Chloride of Zinc**, and this treatment is also recommended by Oliver.[6] **Carbide of Calcium**, to which reference was made in the review of this subject last year, has received recent recommendation from Grusdew.[7] He regards it as the best application in cases of inoperable cancer of the cervix, especially those in which hæmorrhage is the most prominent symptom. Although pain was considerably relieved, he did not obtain such marked beneficial results as were reported by other writers. As a deodorizer its effects rarely persisted beyond a week, when a second application was necessary. The only unpleasant results which he observed were those due to caustic action of the lime on the vaginal walls and vulva, and these could be prevented by introducing pledgets of cotton-wool. He recommends that the carbide be used previous to curetting and cauterizing the diseased tissue.

Leighton[8] considers that the best way to prolong the life of a patient with inoperable carcinoma, and to make that life as comfortable as possible, is to turn the patient into an unconscious **Opium Eater**. He relates a case where under this treatment a patient, aged seventy-one, lived in comparative comfort for two and a half years after the appearance of the disease.

(2,) *Radical treatment.*—The ultimate results of vaginal hysterectomy for cancer of the cervix have in the main proved disappointing, and strenuous efforts are being made by different operators to so improve the operation as to give a greater chance of completely eradicating the disease. Kelly[9] has devised a new operation. He considers that the old plan of skinning or shelling out the bare uterus is of all methods the most liable to be followed by a recurrence, and must be abandoned. It is most important to catheterize the ureters, in order to mark them out during the operation, and to enable the operator to work boldly instead of timidly in the parametric tissue. Furthermore, the disease must be given a wide berth by ligating far out in the parametrium, and if necessary dissecting out the ureters, and on the vaginal side by cutting far below the manifestly affected area.

The technique of Kelly's operation is thorough curettage with a serrated spoon curette: division of the vagina on all sides an inch below the diseased area; separation of the vagina from the bladder up to the vesico-uterine peritoneal fold, which is widely opened; a wide opening of the posterior cul-de-sac. The uterus, now hinged by its broad ligaments, is brought out through the anterior opening, as in Martin's operation on the adnexa. This is easily done by pushing back the cervix and climbing up the anterior face of the uterus, step by step, until the fundus is reached with stout toothed forceps. The peritoneum posteriorly is well protected by an abundant loose gauze pack. The next step is the sagittal bisection of the uterus from the fundus through the cervix and the attached vagina with scalpel and scissors As the uterus is cut in halves in this way, each median surface is grasped and held down by a strong toothed forceps. The half that is most affected is now allowed to retract into the vagina, while half of the body of the uterus of the other side is removed by bisecting it horizontally at the cervical junction, cutting from the median cut surface out into the broad ligament, and exposing in this way the uterine artery, which is clamped. The upper half of the body is now grasped afresh on the cervical side and pulled upward, until first the round ligament, and then the ovarian vessels come into view and are clamped, when this quadrant of the uterus is removed. The opposite quadrant—that is to say, the other half of the uterine body—is next removed in the same way. The uterine vessels are now ligated, and the ovaries and tubes are removed after ligating the ovarian vessels near the pelvic brim. The side of the cervix least affected, and there is generally a marked difference, is now removed carefully, tying the vessels as they are exposed, and

keeping the finger constantly on the ureter. The steps of the operation thus far described have as a rule been easily and rapidly carried out. Three-quarters of the uterus have been removed, and the remaining quadrant, that side of the cervix where the infiltration is most marked, now remains to be extirpated also, completing the operation. So important is this last step that the operation may at this point be looked upon as having only just begun. All the skill and dexterity of the operator must now be concentrated on the effort to secure the most thorough extirpation of the remaining nodule. In order to meet this indication, and to fight the disease in the only stronghold where its invasion has given it a firm hold on the tissues, the extirpation of the three portions of the uterus—that is to say, the entire body and half the cervix—has afforded a maximum space, while the bisection allows the remaining mass to be rotated downward and outward within easier reach. It is a question whether ligature or cautery offers the best chance to go deepest into the tissues in meeting this supreme indication. The ureter will, as a rule, be bared, and if it is clearly involved in the disease it should be sacrificed without compunction, cut off, and reanastomosed into the base of the bladder further back. The operation may then proceed just as if the ureter did not exist, and the enucleation may be extended all the way out to the pelvic wall. After completing the enucleation the wound should be closed in the middle, and both sides drawn down. In simpler cases the peritoneum is closed without a drain.

So far eleven cases have been operated on in this way, and they have all made perfect recoveries.

Very extensive abdominal operations have been proposed and practised, but by not a few the opinion is held that a case requiring such heroic treatment is best left alone. Nevertheless there is a growing tendency to make use of a combined abdominal and vaginal operation. Some surgeons have freed the uterus from below and then removed it by opening the abdomen, but in this procedure there is considerable risk of infection, and of ingrafting of malignant disease on previously healthy tissues. Funke[10] describes a method by which this risk is obviated ; it is very similar to a method devised by Werder, the steps of which are thus summarised by Cullen[11] :—

(1,) Removal of broken-down carcinomatous cervical tissue, preferably a few days before. (2,) Insertion of ureteral bougies if desired (3,) Opening of the abdomen and ligation of the ovarian vessels and round ligaments. (4,) Freeing of the bladder from the uterus and broad ligaments. (5,) Opening of the broad ligaments

location and freeing of the ureters up to the points at which they enter the bladder. (6,) Ligation of the uterine vessels near their points of origin. (7,) Dissection of the bladder free from the vaginal vault. (8,) Dissection of the rectum from the vaginal vault. (9,) Removal of pelvic lymph glands. (10,) Freeing of the vaginal fornices. (11,) Closure of the pelvic cavity by uniting the vesical peritoneum with that of the rectum, an assistant meanwhile making strong traction on the cervix from below. (12,) Closure of the abdomen. (13,) Ringing of the vaginal vault with a thermo-cautery or knife, thus freeing the uterus and its surrounding vaginal mucosa. (14,) Application of a light gauze pack to the space left in the vaginal vault. As will be noted, the uterus was thus freed on all sides, the vagina dissected loose from the bladder and rectum, and the pelvic and abdominal cavities closed, before the operator came in contact with the carcinomatous cervix.

In comparing the vaginal and abdominal routes, Deaver[12] says that vaginal hysterectomy is an operation which presents no special difficulties in the class of cases to which it is applicable. It is applicable only in those cases where the carcinomatous process is confined strictly to the vaginal portion of the cervix, the cervical or uterine canal, and where the uterus is freely movable. In cases where there are adhesions fixing the organ, or where there is or has been inflammation or fixation of the appendages, the abdominal operation is safer, easier, and a more rational procedure. Any enlargement of the uterus vastly increases the difficulties of the operation, and offers another objection to vaginal hysterectomy.

After-results of radical operations.—Lewers[13] reports the results of forty cases of vaginal hysterectomy for cancer. Of these, eleven had remained well and free from recurrence from two to seven years after operation. Briggs[14] gives the results of eighty-four cases; thirteen had been operated upon only one year or less, and were therefore not conclusive. Out of the seventy-one patients operated upon prior to the end of 1899, three died from operation, nineteen had recurrence and died within the first year, and fifteen had recurrence and died within the second year. No other causes of death were certified. This ratio of early recurrence was to be deplored. It was often noticed in published records; but putting the two groups together (one and two) there were twenty-two patients out of sixty-six who had been traced alive and apparently free from recurrence, one and a quarter to ten years after operation, amongst his cases.

Cullen (*op. cit.*) gives the following analysis of 176 cases in the Johns Hopkins Hospital during the last six years :—

Variety of Carcinoma.	*Operative Cases.*	*Patients Well January 1, 1900.*
Squamous-cell d carcinoma of the cervix. ...	61	13 = 21%
Adenocarcinoma of the cervix	12	2 = 16%
Adenocarcinoma of the body of the uterus. ...	30	19 = 63%
Cases Coming too Late for Operation.		
Squamous-celled carcinoma of the cervix		62 cases
Adenocarcinoma of the cervix		6 cases
Adenocarcinoma of the body		5 cases
Total		... 176 cases

The moral drawn by all operators is the value of *early* diagnosis and the importance of *complete* operations.

REFERENCES.—[1]Quoted in *New York Med. Jour.*, Nov. 17, 1900; [2]*Brit. Med. Jour.*, Jan. 19, 1901; [3]*Ibid.*, July 13, 1901; [4]*Cent. f. Gyn.*, April, 1900; [5]*Wien. Med. Woch.*, No. 4, 1901; [6]*Brit. Med. Jour.*, Jan. 19, 1901; [7]*Münch. Med. Woch.*, June 12, 1900; [8]*Brit. Med. Jour.*, March 16, 1901; [9]*Johns Hopkins Hosp. Bull.*, March 1900; [10]*Münch. Med. Woch.*, Feb. 5, 1901; [11]*New York Med. Jour.*, Oct. 27, 1900; [12]*Jour. of the Amer. Med. Assoc.*, June 30, 1900; [13]*Brit. Med. Jour.*, Nov. 17, 1900; [14]*Ibid.*, Feb. 23, 1901.

UTERUS Displacements of).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

DIAGNOSIS.—Hammond,[1] speaking of the use of pessaries, emphasizes the importance of correct diagnosis. He points out that masses anterior or posterior to the uterus, and fibroids in the uterine walls, have often been mistaken for a displaced uterus, and treated by tampons and pessaries. In all cases of doubt an anæsthetic should be given.

Retroflexion of the Gravid Uterus.—Munro Kerr,[2] says, with regard to the diagnosis of this condition :—Undoubtedly the diagnosis between this condition and an extra-uterine pregnancy is often difficult. Indeed, judging by the reported cases, the symptoms may be almost exactly similar. The fact, however, that with extra-uterine pregnancy one usually gets a history of irregular discharges of blood, that the retention of urine is seldom so complete, that the contour of the sac is less uniformly smooth, and that the cervix is seldom so much displaced upwards, will usually clear up the diagnosis. Barnes, in his *Lectures on Obstetric Operations* (fourth edition), speaking of the subject on p. 276, lays special stress on the position of the cervix. He says :—"One general fact of great service in forming a diagnosis is this : Almost all bodies which get into Douglas's pouch come from above, and so push the uterus not only forwards, but at the same time downwards, thus bringing the os uteri within

easy reach and pointing downwards. On the other hand, retroversions of the uterus lift the os upwards and tend to throw it forwards." Theoretically that may be correct, but in practice it is not always so, as witness Barbour's case, where the cervix was "above reach," and the case I have reported, where it was distinctly higher than usual. The irregular discharges of blood—so helpful in the differential diagnosis, as pointed out by Barbour—are not always present, as in my case they occurred only after manipulative attempts at replacement. Undoubtedly the point that is of the greatest importance in the diagnosis of obscure cases, is that with extra-uterine pregnancy the retention of urine is never so complete as with a retro-displacement.

Japp Sinclair[3] points out that the striking constant feature of this condition is irritability of the bladder, with more or less retention of urine.

Treatment.—In Sinclair's paper the treatment advocated consists essentially in the introduction of a watch-spring pessary, care having previously been taken to empty the bowel and bladder. After the introduction of the pessary, if the patient was made to rest on her side, lying over with her face downwards as far as she could with comfort, it would be found that the action of the pessary alone restored the uterus to its normal position in a few hours.

Retroflexion and Version of the non-pregnant Uterus.—There has been considerable further discussion about Alexander's operation. Thus Watkins[4] says: "The Alexander operation, so popular in this country, is a much-abused operation. It doubtless has a place in the list, but the cases to which it is adapted should be selected with care. It is difficult to perform, and a large number of reported successes are incorrect. I have done ventral suspension in cases where the Alexander operation had been performed, finding the uterus thoroughly retroflexed." He prefers ventro-suspension, and considers that the complications attributed to it are, as a rule, due to faulty technique. Difficulty during labour, and interference with the bladder, are the results of including too much uterine tissue antero-posteriorly, and limiting too much the upward and downward movement of the organ. He has never seen any difficulty during labor after this operation, when it has been performed according to the methods laid down by Kelly.

Ebberlin,[5] on the other hand, in writing of this operation for retrodeviations and prolapse of the uterus, says that, of all procedures proposed for the relief of these conditions, shortening of the round ligaments in the inguinal canal is the most rational, and is most

certain of relieving the ailments. The surest way of finding the round ligament is by opening the inguinal canal. No complications arise during pregnancy or labour as a result of the operation, and when the incised parts are accurately united layer by layer, no danger of hernia exists.

Guido V. Török[6] also advocates opening up the inguinal canal, to secure perfect motility of the round ligament. He passes the sutures as follows: through the aponeurosis of the external oblique, the deep muscular layers, the round ligament, a portion of Poupart's ligament, and the cremaster muscle, and finally the aponeurosis of the external oblique. It is important to close the inguinal canal so that a hernia shall be avoided.

Complications following the operation are recorded by Muratow.[7] Two patients who became pregnant aborted in consequence of the fact that the ligaments were so shortened that the uterus could not rise into the abdominal cavity; one patient died from septic infection. In two instances the ovaries were imprisoned between the uterus and the anterior abdominal wall. The writer does not deny the great value of the operation, but thinks that greater care should be observed in the choice of cases, especially in young women.

Vineberg[8] advocates suturing the round ligament to the vaginal wall, by anterior colpotomy. He gives the results of fifty-three cases so treated, and sums up the indications for the operation as follows: (1,) In all cases of mobile retroversions and flexions of the uterus in which a surgical procedure, for one reason or another, may be deemed necessary; (2,) In the same conditions, when they are associated with prolapsus uteri of the first and second degree; (3,) In all cases of adherent retroversions and flexion in which the uterus only is adherent; (4,) In cases of retroversions and flexion, associated with moderate disease of the adnexa, such as cystic ovaries, catarrhal salpingitis, hydrosalpinx, hæmatosalpinx, and pyosalpinx, when the latter is of moderate size, and not too firmly and extensively adherent; (5,) It is the operation for choice in women with thin, lax, abdominal walls, which would offer a poor support for the uterus. The same applies to the extreme opposite condition, in women with very fat abdominal walls, in whom a suprapubic operation constitutes a very serious affair.

Prolapse and Procidentia of the Uterus.—Lambret[9] discusses the question of genital prolapse in nulliparous subjects, and considers that while heavy work and rupture of the perineum are predisposing causes of the condition, its occurrence in nulliparæ shows that there are other factors at work, principally an atonic and relaxed

condition of the tissues of the pelvis, and especially of the uterine ligaments. With regard to treatment, fixation operations do not commend themselves to the author, because with relaxed tissues new adhesions are apt to very soon stretch and allow of the prolapse recurring. Also these operations are not without their bad effects on pregnancy and involution of the uterus. Shortening of the ligaments is a comparatively new operation, and more experience of such operations is necessary before an opinion can be given. The preference is given to plastic, vaginal, and perineal operations by the author, who advocates that these should be " veritable resections." The flaps raised in the colporrhaphy should be large and thick, including the whole thickness of the vaginal walls, such as would after suturing very considerably narrow the vaginal strait.

Oliver[10] records a case of procidentia in a girl aged seventeen. It was attributed to heavy work, and the uterus projected three inches beyond the vulva. The uterine cavity was elongated by half-an-inch above the normal. The treatment adopted by him with success was ventrofixation.

Procidentia Uteri in Elderly Women.—A. Lapthorn Smith[11] says that in the majority of these cases we find a lacerated cervix, and that this, together with a lacerated perineum, forms the initial lesion, which brings about the prolapse. The laceration prevents involution of the uterus, and the latter organ, instead of becoming small and light, remains large and heavy. Owing to the too general practice of keeping women lying on their backs after confinement, the subinvoluted uterus becomes a retroverted one by gravity, and when the woman gets up the bowels fall in front of the womb, and the round ligaments are unable to pull the fundus forward again, so that the uterus is forced on to a lower plane in the pelvis. There being no perineal support to oppose both gravity and intra-abdominal pressure, the cervix appears at the vulva, bringing the bladder and rectum with it, causing a chronic cystitis and a dragging pain in the back.

In regard to operative measures we may follow one of two plans, according to the degree of the prolapse, and the size of the uterus. If the latter is small and not far enough out of the body to become ulcerated, the safest operation is to make a small incision in the abdomen, and catching the fundus with the bullet forceps, draw it up to the incision and scarify the whole anterior surface of the fundus, and then to sew it to the abdominal wall with buried chromicized catgut ; after which the vaginal outlet is narrowed by a large anterior and posterior colporrhaphy. If, however, the uterus is very long—sometimes the sound measures seven or eight inches deep—

and especially if it is badly ulcerated, it is better to amputate all but the upper two inches of it, and then to narrow the outlet.

Inversion of the Uterus.—McVeagh[12] records a case of acute inversion following labour. The uterus was found with the placenta adherent all over its inverted surface. He tried first to reduce the organ *en masse*, but found it impossible so to do. He then separated the secundines completely (hæmorrhage ceasing immediately), grasped the cervical end of the womb, kneading the organ gradually and firmly up until he was satisfied that it was well above the brim. He then screwed up his fingers, and pressed persistently on the inverted fundus, when in about three minutes he was rewarded by its reduction with an unmistakable flap.

Oliver[13] relates a case of chronic inversion. It began as an acute condition following labour, and taxis was then unsuccessfully attempted, on two successive days, after which the patient refused to allow further efforts at restoration. Six months later, it was successfully restored to the normal condition by the use of Aveling's repositor, which was left *in situ* for three days. The symptoms to which the inversion had given rise were recurrent hæmorrhage and general weakness, incapacitating her from her duties. At the menstrual periods the inverted uterus protruded further out of the vulva than in the intervals, and she suffered great pain.

REFERENCES.—[1]*Phil. Med. Jour.*, May 12, 1900; [2]*Obst. Trans. Lond.*, 1900, p. 154; [3]*Ibid.*, p. 338; [4]*New York Med. Jour.*, March 24, 1900; [5]*Ibid.*, Nov. 17, 1900; [6]*Ibid.*, quoted in, June 9, 1900; [7]*St. Petersb. Med. Woch.*, No. 5, 1900; [8]Abstract in *Brit. Med. Jour.*, epit., June 9, 1900; [9]*L'Echo Méd. du Nord.*, Feb. 4, 1900. [10]*Brit. Med. Jour.*, July 14, 1900; [11]*Canad. Pract. and Rev.*, Oct., 1900; [12]*Brit. Med. Jour.*, July 28, 1900; [13]*Lancet*, Jan. 12, 1901.

VACCINATION. *Norman Walker, M.D.*

Sobel[1] gives very interesting statistics, from Dr. Allen's *Dermatological Clinique*, of the generalised eruptions following on vaccination. Excluding extraneous infections—impetigo contagiosa and the like—he found that 14 per cent (80 out of 583 children) were the subjects of vaccinal eruptions. During that period over 4,000 children were vaccinated at the dispensary, so that the proportion of generalised eruptions is about 2 per cent.

The most common is urticaria, which appears about the tenth day. In some cases the wheals are typical, in others they are small and surmounted by vesicles, somewhat resembling varicella. Sometimes the eruption was localised to the vaccinated arm. The morbilliform rash appeared ten or eleven days after vaccination. It closely

resembled measles, but the temperature was hardly elevated, there was no desquamation, and Koplik's sign was absent. The vesicular eruptions appeared a little later, from the eleventh to the fifteenth day. Sometimes the trunk was mainly involved, in others the extremities. In very few instances was the vesicular eruption limited to the vaccinated arm.

Some cases were extremely like chicken-pox. A scarlatiniform rash occurred four times. The temperature was elevated, and the children seemed ill. There was no irritation of the throat, and the eruption subsided in from twenty-four to forty-eight hours without desquamation. Bullous rashes several times appeared; they were differentiated from syphilitic rashes by their early occurrence. Congenital syphilis appears in the first six weeks, and inoculated syphilis would only appear some weeks after vaccination. Erythema multiforme was recorded a number of times. One case was hæmorrhagic, and another presented the typical ringed form of erythema annulare.

Bowen[2] reports several cases of bullous dermatitis following upon vaccination. The cases to some extent resembled dermatitis herpetiformis, but most of them apparently disappeared after lasting some months. The blood showed eosinophilia. The lesions, when examined after excision, showed striking resemblance to the lesions of Duhring's disease. I have described[3] a series of cases following on vaccination which closely simulated that form of erythema known as erythema iris.

Corlett, White and Gilchrist have all observed similar cases following on vaccination. It is interesting to note that all of them have followed on the use of animal lymph. In the cases under my observation all the lymph was glycerinated.

REFERENCES.—[1]*Med. News*, Aug. 11, 1900; [2]*Jour. Cut. Dis.*, Sept., 1901; [3]*Brit. Med. Jour.*, May 18, 1901.

VARICELLA. (See also "Small-pox.")

Edward Wilberforce Goodall, M.D

Dr. Leon Cerf[1] has drawn attention to the accidental rashes that occasionally are met with in this affection, though they have long been known to those who have any considerable experience of infectious disorders. The one most commonly met with in chicken-pox is a diffused erythema, usually confined to the trunk. It is rarely punctate. It is often mistaken for scarlet fever. Sometimes the rash is patchy; it may make its appearance before or after the characteristic eruption of varicella has come out. Very rarely this accidental rash is morbilliform or purpuric.

REFERENCE.—[1]*La Presse Méd.*, Oct., 1900.

VARICOCELE. *Priestley Leech, M.D., F.R.C.S.*

In a clinical lecture on this subject Bennett[1] touches on some very useful points in connection with it. As regards causation, he says many patients believe that it is a result of masturbation, a belief that is often fostered by quacks. There are no grounds for this belief; the condition is a congenital one, nor does it lead to impotence. At puberty the whole of the generative system is in excessive growth, an abnormal amount of sensitiveness may be developed in cases of varicocele, and this may tend to bad habits. The two commonest varieties of this condition are: (1,) Consisting of very large veins passing down from the inguinal canal and the external abdominal ring to the testicle, the veins sometimes reach a large size; this is the commonest form, and in the absence of injury it is generally harmless; (2,) The veins are small and very numerous; they are massed around the testicle, the upper part of the cord being practically normal, and at first sight the condition would be mistaken for a very large testicle. In the latter case there is more often defective growth of the testicle. The small testicles in varicocele are not wasted testicles, but have been checked in their growth in consequence of interference with nutrition from the abnormal growth of veins. In some of these cases patients develop morbid symptoms in connection with the varicocele. They brood so over the existence of the varicocele, that their condition becomes miserable in the extreme. They are as a rule people who live much alone, and are sensitive and intelligent above the average. In these hypochondriacal cases it is exceedingly difficult to know whether to operate or not. Arguments from the point of view that the varicocele is harmless, are useless, unless in the first instance the conditions of life ordinarily led are entirely changed. If the patient believes that an operation will cure, operate, and in about 60 per cent of the cases he will be cured; in the other 40 per cent it will fail. In any case do not do any further operation, for even if castration be done such patients will be no better; they often develop suicidal mania. The operation Bennett does for varicocele is as follows: A half to three-quarters of an inch incision is made over the cord over the external abdominal ring. The whole of the cord except the vas deferens is pulled out of the wound by means of an aneurism needle or hook (*Fig.* 50): the veins are not laid bare, the spermatic fascia only being exposed. Inside this fascia with the veins is generally the spermatic artery. The loop is pulled out and a stout ligature of carbolised silk is tied round the proximal portion (*Fig.* 51); the distal part of the loop is seized with pressure forceps and the loop divided below the upper ligature

(*Fig.* 52). The portion gripped by the forceps is turned back, freed from any fibrous connections, and drawn out of the wound until the upper end of the epididymis appears, and in advance of the epididymis there comes arching up through the wound a roundish

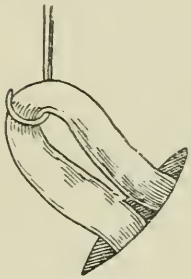


Fig. 50.

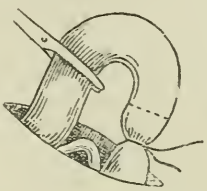


Fig. 51.

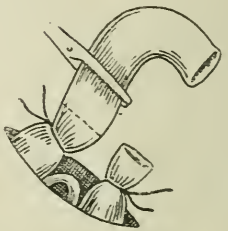


Fig. 52.

whitish cord which is the vas deferens (*Fig.* 52). A ligature is then placed round the pulled-out portion just above the vas, and it is then divided (*Fig.* 53). The two ends are then united (*Fig.* 54). The incision generally heals by first intention if the skin is properly cleaned beforehand and the incision is made high up above the scrotum. Bennett thinks wasting of the testicle is more likely to occur if the spermatic artery is not excised along with the veins. There is no fear of gangrene of the testicle, as it receives enough nourishment through the artery to the vas deferens, and from branches in the sub-vaginal connective tissue. (See also "Testis.")

Fig. 53.

Fig. 54.

REFERENCE.—[1] *Brit. Med. Jour.*, p. 501, vol. i, 1901.

VELDT SORES. *James Cantlie, M.B., F.R.C.S.*

J. W. Pridmore,[1] from observations during eight months' campaigning in South Africa, makes the following observations on the subject of veldt sores and their relation to the horse tick: (1,) In cold weather and in high altitudes the horse tick is rare, and veldt sores disappear; (2,) Veldt sores are more common amongst soldiers brought in contact with horses, namely, the cavalry and artillery; (3,) Amongst officers veldt sores are unknown, as they do not groom their horses; (4,) The sore seems to be of a bacterial origin. The character and behaviour of the ulcer would seem to favour this

view of its etiology, as the ulcer spreads at its periphery, so also at times does the slowness with which it heals. Pridmore found that wet, mild, antiseptic applications are best; ointments are to be avoided altogether.

REFERENCE.—[1]*Brit. Med. Jour.*, Jan. 26, 1901.

VISION (Errors of Refraction and Accommodation).

A. St.Clair Buxton, F.R.C.S.E.

It is probable that many of the readers of the *Medical Annual* are thoroughly proficient refractionists, and for them this article will have but little interest. It may prove, however, of some help to others who have possibly had little opportunity of rendering themselves familiar with the practical side of the matter. If it does this it will achieve its object.

APPARATUS REQUIRED.

A sheet of Distant Types and Astigmatism Fan.

A sheet of Snellen's (or Jaeger's) Near Types.

A Retinoscopy Mirror (concave mirror about 25 centimetres focus, with a 3 mm. sight-hole in the centre).

A box of Trial Lenses, with double trial frame, vulcanite "blank" disc, and 3 pin-hole discs having holes $\frac{1}{2}$ mm., 1 mm., and 2 mm. diameter respectively.

In making his diagnosis when there is deficiency of sight, whether for distant objects or near ones, or both, the surgeon should bear in mind that whatever the precise nature of the obstacle to clear vision may be, it is referable to at least one of four causes :—

(1,) Opacity of the refractive media of the eye.

(2,) Some lesion of the nervous apparatus.

(3,) An error of refraction.

(4,) Defective accommodation.

His first care will therefore be to discover which of these causes is answerable for the trouble.

An opacity in any of the refractive media (cornea, aqueous, lens, and vitreous) which should, of course, be absolutely transparent, is not difficult to detect with the ophthalmoscope, with which instrument it is assumed the reader is familiar—at any rate sufficiently so to be able to see the details of the fundus of a normal eye. Supposing the pupil to be not unusually small, in which case it may be dilated by the application of a few drops of 5 per cent solution of cocaine hydrochlorate, a difficulty experienced in obtaining a good view of the retinal vessels and optic disc would naturally suggest some impediment to the free passage of light. An opacity in the cornea or lens

is readily detected by throwing a beam of light upon the eye from a lamp by means of the ophthalmoscope lens. On looking through another magnifying glass at the illuminated surfaces a very good idea of the situation and extent of this opacity will be obtained. Turbidity of the aqueous humour requires but a glance to be seen, the cornea being clear and the colour and structural details of the iris indistinct. Should cornea, aqueous and lens all be free from defect and yet the view of the fundus be difficult to obtain, it may be presumed that the obstruction lies in the vitreous.

Having ascertained that no opacity exists, the next step in the examination will be to accurately note the patient's acuteness of vision. A sheet of Distant Types (see *Plate XXIII*) is placed on a wall in a good light (but not in direct sun-light) at the level of the patient's head, 6 metres off. One eye only is to be examined at a time, the other one being "blocked" by using a trial frame with a vulcanite disc in the lens groove of that side. A normally-sighted eye should read the line of letters marked D = 6, the smallest letters of the set.

In noting down the vision it is convenient to use a fraction of which the numerator represents the number of metres between the patient and the Distant Types, while the denominator represents the line of letters which the eye can read. Thus, for example, the vision of a patient's right eye, capable of seeing the smallest letters (marked D = 6) at 6 metres, would be noted as R.V. = $\frac{6}{6}$; and if the left eye were only able to read the next larger row of letters (marked D = 9) at 6 metres, the surgeon would write L.V. = $\frac{6}{9}$.

In many cases a patient cannot see any of the letters at 6 metres; he must in that case advance gradually towards the Distant Types until he is near enough to make out the top letter, marked D=60. Supposing it to have been necessary for the patient to walk to a point only 3 metres from the Distant Types in order to see the largest letter, his vision would be $\frac{3}{60}$.

It is as well to take the opportunity at this stage of the examination of testing the near vision. For this purpose a sheet of Snellen's Types are given to the patient, and he is asked to read the smallest type which he can decipher at any distance convenient to himself. The number of the type and the distance in centimetres at which he naturally holds the sheet from his eye are noted, and also *how near* and *how far off* he can read the same type. This latter *difference* is called his range of accommodation.

The sight of each eye having been carefully tried and noted, the medical man should proceed with his investigation as follows: One

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eye being blocked, as before, with a vulcanite blank, a vulcanite disc, having at its centre a circular hole about $\frac{1}{2}$ a millimetre in diameter, is placed in the groove before the other eye. If, on looking through the minute aperture, the patient can see the Distant Types much more distinctly than before, there is most probably an error of refraction. If little or no improvement be noticed, a disc having an aperture of 1 millimetre is tried; if still no better vision results, yet a third disc with an aperture of 2 millimetres may be employed. These three sizes of hole are usually sufficient to detect the presence of any error of refraction, and the method is called the pin-hole test. The writer generally uses a combination of the three discs made in the form of a trefoil, which he finds very convenient.

The use of the retinoscopy mirror, to be described in due course, will confirm the subjective test above mentioned.

If no opacity and no error of refraction exist, and yet the distant vision be markedly below the proper standard, there is a deficiency in some portion of the nervous apparatus connected with the eye.

Loss of accommodation, that is, of ability to contract the ciliary muscle for the purpose of increasing the refractive power of the lens by altering its curvature, increases as age advances by reason of the lens itself becoming gradually less and less elastic.

In the case of those who are optically normal this steady decline of power to focus near objects, such as ordinary print, is generally first felt between the ages of forty and forty-five, and is very regular in its progress, so much so that, assuming that no error of refraction exists, or knowing what that error amounts to, and being acquainted with the age of the patient, it is almost always possible to select off-hand the lenses which will enable him to read small print at the proper distance. The correction of this defect will be dealt with after describing the estimation of errors of refraction. Suffice it for the moment that when a middle-aged or elderly person, whose distant vision is found to be good, complains that he cannot read ordinary print with the same facility as formerly, loss of accommodation—called *presbyopia*—is at the bottom of it.

Before passing on to the detection and estimation of the various errors of refraction, it will be well to recall the optical conditions which characterise these anomalies.

In the case of the normal, or emmetropic eye, the globe is practically a perfect sphere, with the addition on its anterior aspect of the prominence of the cornea, like a small watch-glass covering in the iris. The refractive media of the eye, of which the chief one is the lens, are of such effectiveness as to cause parallel rays of light—rays coming from

a distant point—to come to a focus on the retina without any effort of accommodation. *Fig.* 55 shows this. The dotted lines represent a beam of light coming from a candle several metres away. Unhappily, there are numbers of people whose eyes are not emmetropic, and in which, therefore, parallel rays do not come to a focus on the retina while the eye is passive. In some they converge to a point before they have reached the retina, as in *Fig.* 56, for in this case the eye is too long in its antero-posterior diameter, and *myopia* is the result. In others the parallel rays strike the retina before they have converged to a focus, for the antero-posterior diameter of the globe is too short, as in *Fig.* 57, and in that case we have *hypermetropia*.

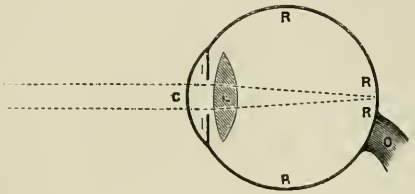


Fig. 55.—*L*—Lens. *C*—Cornea. *I*—Iris. *R R R R*—Retina. *O*—Optic Nerve.
N.B.—The Lens is really in contact with the Iris, but has been drawn somewhat further back for the sake of clearness.

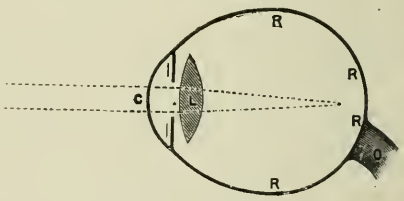


Fig. 56.—Letters as before.

In order that the image of any object may be perfectly appreciated it is essential that the rays coming from that object should be accurately focussed on the yellow spot of the retina; it is therefore necessary to act on the rays of light in abnormal cases, such as those depicted above, in order to modify their convergence.

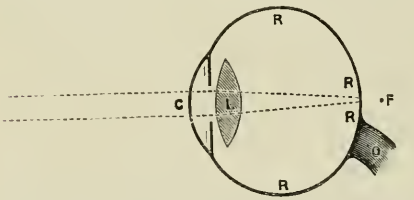


Fig. 57.—Letters as before. *F*—Point where ray would meet if prolonged.

In *simple myopia* we have a lens that is too strong for its elongated globe; while in *simple hypermetropia* the lens is relatively too weak. In both these cases, however, the lens is, for all practical purposes, like a well-made magnifying glass, symmetrical and optically true, erring only in point of refractive *strength*. The cornea also is circular in outline and refracts

evenly. But optical deformities of the eye are not limited to the two varieties—*simple myopia* and *simple hypermetropia*—which we have been considering. Want of symmetry in the curvature of lens or cornea is far from uncommon.

Imagine an eye whose cornea or lens is *not* circular in outline, but somewhat oval. In such a case the curved surfaces of these refractive media would not act uniformly on all parallel rays which might fall on them, for if either lens or cornea were oval in section instead of circular, it is evident that in one meridian the diameter would be longer than in all others, especially the one at right angles to it, which would be the shortest ; and furthermore that the curvature of the surface in the direction of the longest diameter would be flatter than in the other, especially the shortest diameter, in which it would be the sharpest or least flat. In considering such want of symmetry it will suffice to speak of the two principal diameters, the longest and the shortest, ignoring those of intermediate length.

As a practical illustration of the refractive effect resulting from the passage of light through a body with unequally-curved surfaces, an ordinary glass bead or button that is not quite globular, but shaped somewhat like an egg or lemon, will serve our purpose excellently. In looking through such a glass bead at a line of fine print held just on the other side of it, it will be noticed that the letters are magnified in all directions, but more so in the direction of the short diameter of the bead than in that of the long diameter. In other words, the letters are distorted. A lens producing such an effect is *astigmatic*, and an eye whose cornea or lens refracts light unequally is called an astigmatic eye.

The optical effect as regards vision may easily be imagined, for it is impossible that all the parallel rays which traverse such a distorting lens can be uniformly focussed on the same spot—hence the expression *astigmatism*. Even if some portion of the image cast upon the retina by an astigmatic medium be distinct, the other portions must be blurred.

There are five possible varieties of regular *astigmatism* :—

(1,) *Simple Myopic Astigmatism*.—The rays in one principal meridian are focussed on the retina ; those in the other principal meridian (at right angles to the first) converge before reaching the retina.

(2,) *Simple Hypermetropic Astigmatism*.—The rays in one principal meridian are focussed on the retina ; those in the other principal meridian strike the retina before they have converged to a focus.

(3,) *Compound Myopic Astigmatism*.—All the rays converge

before reaching the retina ; those in one principal meridian sooner than those in the other principal meridian.

(4,) *Compound Hypermetropic Astigmatism.*—The rays all strike the retina before they have been focussed ; those in one principal meridian have converged more than those in the other principal meridian.

(5,) *Mixed Astigmatism.*—The rays in one principal meridian converge before reaching the retina ; those in the other principal meridian strike the retina before they have been focussed.

In addition to the five kinds of *regular astigmatism*, there exists also a variety known as *irregular astigmatism.* This defect is due, as its name implies, to the passage of light through one of the refracting media, generally the cornea, whose surface is irregularly curved. It often occurs in eyes when there has been extensive ulceration of the cornea, the resulting cicatrices having contracted unevenly and dragged the cornea into irregular forms. But it also exists independently of disease or traumatism. Glasses may improve such vision but can never render it perfect.

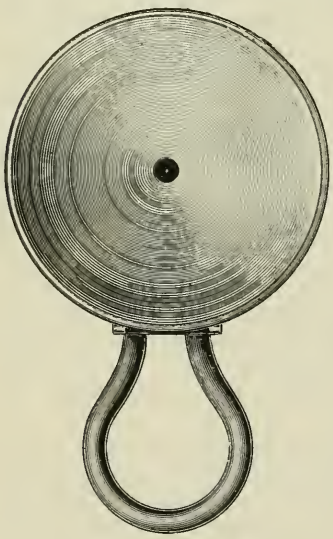


Fig. 58.—Retinoscopy Mirror.

Retinoscopy.

The distant vision, and also the near vision, with the range of accommodation, having been duly noted, the patient may now be taken into the dark room. This apartment need not be absolutely devoid of light, nor indeed can it be so, for it is necessary that it should be fitted up with a gas bracket, freely moveable horizontally and vertically, and having an argand burner attached to it. In country houses, where no gas is obtainable, a good paraffin lamp with a single wick will answer the purpose, but it is not so convenient as an argand gas burner. Beyond this single source of illumination, however, there should be no other light in the room.

By means of the Retinoscopy Mirror (*Fig.* 58) the surgeon may now readily decide the character of the error with which he has to deal.

Should the pupils of the patient be unusually small, or should he be a young person under sixteen, the pupils should be dilated. In the case of a child, by the application of a few drops of atropine solution (2 grains to the fluid ounce) instilled at least an hour, and, if possible, every night and morning for three or four days, before examination in the dark room; and in the case of an adult, with a few drops of cocaine hydrochlorate solution (3 grains to the fluid drachm) applied at intervals of ten minutes three or four times just before the examination with the mirror.

But if the patient be an adult and the pupils be of fair size, no mydriatic will be needed. It is important to note the acuity of vision *before* using a mydriatic; and it must be borne in mind that the error of refraction as shown with a mydriatic, especially atropine, differs considerably, and in direct ratio to the youth of the patient, from that which is noticeable without a mydriatic. The reason of this is simply that when the eye is in its ordinary condition the ciliary muscle is in a state of slight *contraction*, causing the lens to be more sharply curved than when the ciliary muscle is paralysed by atropine. So that when atropine is used the lens flattens somewhat—except in the case of old people, whose ciliary muscles are already inactive. The younger the subject the greater is therefore the difference of error. *Hypermetropia* in an atropised eye is more marked than before the atropine was applied; and *myopia*, *vice versâ*, diminishes somewhat.

If a mydriatic has been employed, therefore, it will be necessary, after computing the amount of error present, to wait until the pupils have resumed their accustomed activity before prescribing spectacles, in order to see *how much* correction can then be comfortably borne. The full error, as revealed under atropine, is spoken of as the Total Error; the amount noticeable without atropine is called the Manifest Error; and the difference between these two quantities is the Latent Error. In *myopia* this is of course a negative quantity. Young children showing only low degrees of *hypermetropia* under atropine would probably appear to be slightly myopic without it.

The patient, then, being seated in the dark room with the argand burner a little above the level of his head, somewhat to one side and about a foot behind him, the operator seats himself facing the patient, their respective heads being four feet apart.

In examining the patient's right eye the surgeon uses his own right eye; and for the patient's left eye he uses his own left one. We will suppose the right eye is under examination. The surgeon, holding the retinoscopy mirror with his right hand to his own right

eye, and looking at the patient's right eye through the sight-hole, directs it in such a manner as to reflect the light of the gas flame on to the eye he is testing, taking care to instruct the patient to look steadily at the tip of his little finger (of the hand holding the mirror), which he extends to the level of the sight-hole and at about four inches from it, as in using the ophthalmoscope when looking at the optic disc. This position of the observed eye enables the surgeon to see the reflex through the patient's pupil much more easily than when the patient looks point blank at the centre of the mirror, though this latter direction gives more strictly accurate results. But the difference is very slight, and for all practical purposes the easier method is quite accurate enough.

If these instructions have been carefully followed, the surgeon will notice that the pupillary area of the eye he is testing no longer appears black, but is brilliantly illuminated. This brightness is called the reflex.

On slowly rotating* the mirror until the light no longer falls on the patient's cornea, it will be observed that the change in the appearance of the pupil from light to black has come about in one of two ways. Either the darkness has crept over the pupillary area in the same direction as the mirror was rotated—has followed, as it were,

Fig. 59.

in the track of the retreating beam of light—or it has come from the opposite direction (*Fig.* 59).

In well-marked cases of *myopia* the shadow moves across the pupil in the same direction as the rotation of the mirror. In cases of *hypermetropia* the shadow moves against the mirror.†

The rapidity of the movement of the shadow relatively to the motion of the mirror is a most important point, because it depends on the amount of the error present. It is therefore advisable to get

* "Rotation" of the mirror does not, of course, mean rotation in the sense that a wheel rotates on its axle, but in the same sense that the word is used when speaking of a coin spun on its edge. Only a very partial rotation of the mirror is needed.

† When a *plane* Retinoscopy mirror is used—as some oculists prefer—instead of the *concave* mirror recommended, the reverse of this occurs.

into the habit of using the mirror always at the same uniform speed. The higher the degree of *myopia* the more slowly will the shadow follow the movement of the mirror, and *vice versâ*. Indeed, in *myopia* of half a dioptre (*i.e.*, corrected by a minus lens of half a D.) or less, the shadow actually moves *against* the mirror, but very quickly. This would not be the case if the observer could be sufficiently far off from the patient; but as this is impossible, allowance must be made for this much of error.

In *hypermetropia* a similar effect on speed is noticed. The larger the amount of this error the more slowly does the shadow move against the mirror.

In *emmetropia*—or normal sight—the shadow also moves against the mirror, but more quickly than in *hypermetropia*, and less quickly than in low degrees of *myopia*.

Having thoroughly grasped these salient facts, it is easy to conceive that they may readily be turned to account not only in detecting, but also in measuring the errors which produce the phonemena.

We will suppose that a patient presents himself for examination, and that his acuity of vision is found to be R.V. $= \frac{6}{36}$, L.V. $= \frac{6}{24}$. Having adjusted the trial frame to his face and instructed him to fix his eyes on the tip of the operator's right little finger, the latter holds the mirror with this hand to his own right eye. Looking through the sight-hole, he directs a beam of light on to the patient's right cornea. He now rotates the mirror horizontally, vertically, and in a number of other meridians, observing carefully the movement of the shadow as it passes across the pupillary area in each case. He finds, let us assume, that the shadow moves with the mirror in every meridian. A weak spherical minus lens is now placed in the lens groove of the trial frame in front of the patient's right eye, and the mirror is again brought into play. Still the shadow moves with the mirror; therefore a slightly stronger lens is substituted. But the shadow still moves with the mirror. The process is continued until at last a power of lens is reached—let us suppose that it is Sph. -4 D.—which causes the shadow to move very quickly in the reverse direction. The weakest lens which produces a rapid contrary movement (the movement of *emmetropia*) is approximately the one which corrects the *myopia*. The patient is now directed to look through this lens at the Distant Types 6 metres off, the left eye being blocked. The vision should be greatly improved, and may even $= \frac{6}{6}$. We will suppose that it does so, and add a note to that effect in the case-book thus: R.V. $= \frac{6}{36}$ — Sph. 4 D. $= \frac{6}{6}$.

The process is repeated with the patient's left eye, the surgeon

using his own left eye and holding the mirror in his left hand. He finds, we will suppose, that the weakest lens which turns the shadow against the mirror (as in *emmetropia*) is Sph. — 3·5 D., and that it brings the vision of that eye to $\frac{6}{6}$. In the case-book he therefore writes: L.V. $= \frac{6}{24}$ — Sph. 3·5 D. $= \frac{6}{6}$. Both the patient's eyes being now uncovered, and each having its correcting lens in front of it, he is asked to look at the Distant Types again. The result should be excellent, and spectacles fitted with these lenses should theoretically prove perfectly comfortable for distant vision. We are assuming that no atropine has been used in this particular instance. But in myopic cases, especially of high degree, it often happens that the patient is more happy if something less than the full correction be ordered. He is not always looking at extremely distant objects, and, moreover, the image focussed on the retina of a highly myopic person wearing a fully-correcting lens is very minute, and a patient frequently prefers, for the sake of comfort, to sacrifice a little of the sharpness of definition and use a weaker lens so as to obtain a rather larger image. It is therefore wise, after having computed the exact amount of error, to place in the trial frame lenses of a somewhat lower power. If with these, and using both eyes at once, the patient can still see very nearly as well as with the stronger ones, they may be prescribed in preference to the others if more comfortable.

But supposing that atropine has been employed, the patient must be allowed to get rid of the effects of this mydriatic—after the estimation of his error has been noted—before the spectacles are ordered. This will, of course, take some days, possibly a couple of weeks.

The pupils, then, having resumed their ordinary size and activity, the patient is once more confronted with the Distant Types. The full correction is supplied and he is asked to read the Types. He will now probably only be able to get to $\frac{6}{12}$ or $\frac{6}{9}$. If he can see $\frac{6}{9}$ *easily* with both eyes at once the lenses will suffice. But if only $\frac{6}{12}$ be reached and the addition of another —0·5 D. improves the vision considerably, there is no objection to the increase of power to this extent, or even a trifle more, over and above the full correction under atropine, being prescribed.

We will now introduce to the reader another imaginary patient whose vision is R.V. $= \frac{6}{9}$ nearly, and L.V. $= \frac{6}{9}$ nearly.

On testing by retinoscopy the shadow is seen in each eye to move slowly *against* the mirror. Here we evidently have *hypermetropia*.

Proceeding on the same lines as in the previous example, the surgeon examines each eye in turn. Placing a weak spherical plus lens before the eye he is testing, he plies his mirror and finds the shadow still

moves against it. Lens after lens is tried till at last one power is reached which alters the direction of the movement of the shadow, causing it to go *with* the mirror. It is evident that this lens more than corrects the *hypermetropia*, for it will be remembered that even low degrees of *myopia* yield a shadow which moves against the mirror. The weakest Sph. + lens which causes the shadow to move with the mirror is therefore probably more than half a dioptre too strong, and in practice it is found that even a markedly greater reduction than this must be made to obtain the best vision. The strongest Sph. + lens which allows the eye to see $\frac{6}{6}$, or the nearest approach to $\frac{6}{6}$ possible, is the measure of the *hypermetropia*. And this lens may be prescribed for distant vision—if no atropine has been used—and, indeed, for all purposes in the case of children, whose ciliary muscles are vigorous.

The lenses which correct our imaginary Hypermetrope are, let us say, noted thus :—

R.V. = $\frac{6}{9}$ nearly + Sph. 1·75 D. (atrop.) = $\frac{6}{6}$
L.V. = $\frac{6}{9}$ nearly + Sph. 2 D. (atrop.) = $\frac{6}{6}$

Atropine has in this instance been used, and a fortnight later the patient presents himself again. On replacing the two lenses above noted the vision is found to be R.V. = $\frac{6}{9}$ nearly + Sph. 1·75 D. = $\frac{6}{12}$, L.V. = $\frac{6}{9}$ nearly + Sph. 2 D. = $\frac{6}{12}$ nearly.

The vision is actually worse than with the naked eyes! The ciliary muscles, recovered from their temporary paresis, are now active, and the lenses under these conditions over-correct the manifest error. On gradually diminishing the power of each lens—blocking the other eye the while—we find that the patient can read $\frac{6}{6}$ if we supply his eyes with lenses one dioptre less than the full correction, and we note the fact thus :—

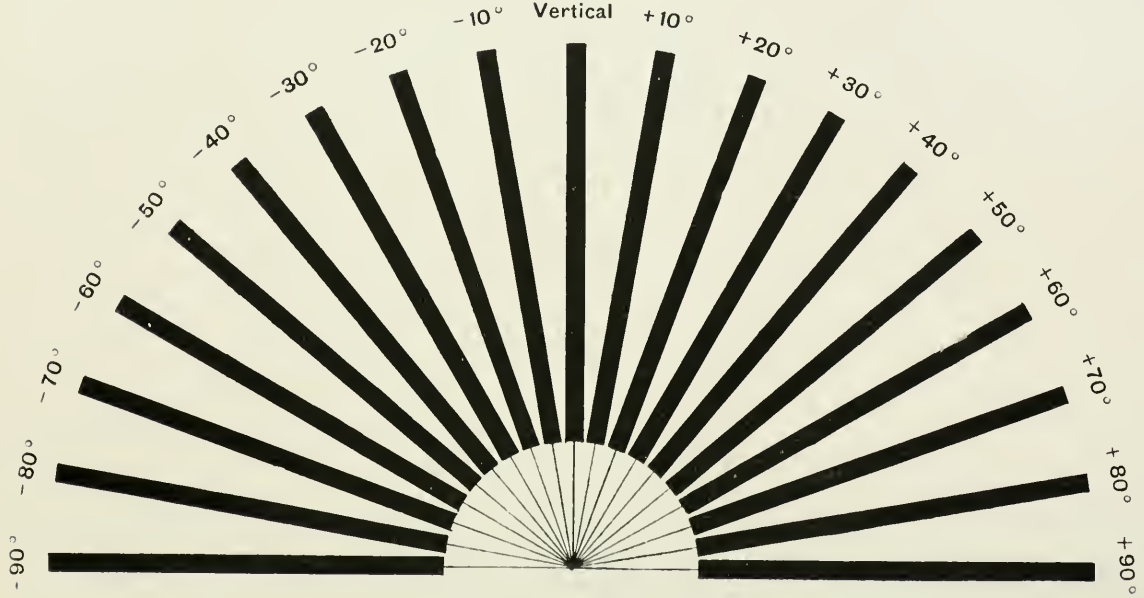
R.V. = $\frac{6}{9}$ nearly + Sph. 1·75 D. (atrop.) = $\frac{6}{6}$, ordered Sph. + 0·75 = $\frac{6}{6}$
L.V. = $\frac{6}{9}$ nearly + Sph. 2 D. (atrop.) = $\frac{6}{6}$, ordered Sph. + 1 = $\frac{6}{6}$

When the two eyes differ widely in refractive error it often happens that the correction which suits each eye *separately* is not comfortable when both eyes are acting together, the difference in the size of the two images produced being sufficiently great to render difficult the appreciation of them as emanating from the same object with binocular vision. The best rule to follow in such cases is to prescribe the proper correction for the better eye, reducing the amount of the correction for the other eye till a point is reached which renders binocular vision comfortable. After a while, when the eyes have become accustomed to the use of glasses, a fuller correction of the worse eye may be attempted—often successfully.

We now come to *astigmatic* eyes. We will take for our first example an eye in which the refraction is normal in the horizontal meridian, *i.e.*, the shadow moves quickly (but not so quickly as in low *myopia*) against the mirror; whilst in the vertical meridian the shadow is observed to move slowly with the mirror. The horizontal meridian being normal, no lens can improve its refraction, so the vertical rays are the only ones, in this case, which need occupy us. Let us suppose that the vision has been noted as $=\frac{6}{18}$ barely. The Astigmatism Fan (*Plate XXIV*) is now placed on the wall side by side with the Distant Types, and the patient is directed to look at the radiating black lines with the astigmatic eye, the other one being blocked. There may be *astigmatism* in the other eye too, or there may not be; but, as in the case of *simple hypermetropia* and *simple myopia*, one eye at a time is to be tested. On looking, then, at the fan the patient will say that he sees most of the lines dimly, but that one or two of the vertical ones are distinct. A weak minus spherical lens is now placed in the lens groove and the mirror brought into action—the rotation being only up and down. The effect of the minus lens is, we will suppose, to produce a slightly quicker movement of the shadow, but it still moves with the mirror. Another, and yet another, spherical lens is used till Sph.—2 D. has been reached, when the shadow is now seen to move emmetropically in the opposite direction. All this time, let it be well understood, the surgeon has taken no notice of the effect which the lenses have had on the refraction horizontally; he has not to concern himself with those rays, having satisfied himself at the outset that the refraction in that meridian was normal. The vertical correction being now estimated at —2 D., he removes the spherical lens from the groove and replaces it by a cylindrical—2 D. ens, placing it so that its axis lies horizontally. A cylindrical lens having no effect on refraction in the direction of the axis of the cylinder, the horizontal rays will be unaffected by the lens so placed; but the rays at right angles to the axis, *i.e.*, the vertical ones in this case, will be acted on to the extent of —2 D. Indeed, if the surgeon now uses his mirror, he will find that the movement of the shadow in every meridian is that of normality. The patient is at this point directed to once more look at the Astigmatism Fan, and if the estimation has been correctly made and the cylindrical lens placed in the proper position, he will admit that he now sees all the lines of the fan equally distinctly and easily. To be quite certain that the cylindrical lens is in its best position, a slight movement in the lens groove, first one way and then the other, must be made, and the position which gives the best visual

PLATE XXIV.

ASTIGMATISM FAN.



results with the lines must be selected. On examining the lens, a little scratch indicating the axis will be found on the glass at each end of this imaginary line. The scratch will rest opposite a number or division engraved on the front of the lens groove, and this will mark the degree at which the cylinder must be placed in making the spectacles. It is possible that a slightly weaker cylinder may give equally good definition, and, if so, it should be employed instead of the first one. It will now be noticed that if the patient turns his attention to the Distant Types his vision has greatly improved—in this case we will suppose that it reaches $\frac{6}{6}$.

In noting the effect of lenses in testing astigmatic eyes it is useful to employ a diagram of two straight lines intersecting each other at right angles, in the shape of a cross. One of the lines should be drawn in the direction of one of the principal meridians, the other, of course, representing that of the other principal meridian. In the example just given the horizontal meridian was normal and the vertical was myopic. So we should have noted the case as in *Fig.* 60. In doing this, and so also in all other cases, we write the note concerning the patient's right eye on the left-hand side of the page, and that relating to his left eye on the right-hand side of the page—corresponding to the relative positions of the patient's eyes as he faces the surgeon. In prescribing spectacles the same rule is observed on the prescription card.

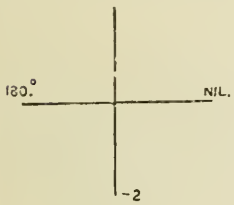


Fig. 60.

The case just considered was one of *simple myopic astigmatism.*

Let us now take one of *simple hypermetropic astigmatism.* The shadow is found to move normally in one meridian—not quite vertically, but nearly so, and we draw the cross accordingly and write *nil* on the more vertical line, as in *Fig.* 61. Proceeding then as before, the plus spherical lens employed to correct the other meridian (as if it were a case of *simple hypermetropia*) is found to be + 1·5 D., so we write that lens down on the other line. Testing now with a cyl. + 1·5 D. and the Astigmatism Fan, we ascertain that the axis of the cyl. must lie in the position indicated by the number 70 on the trial frame in order to make the lines all appear symmetrical. We therefore add another note to the cross to that effect, placing it on the more vertical line. The second eye is, of

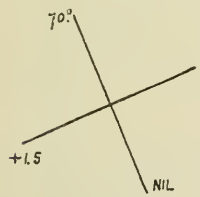


Fig. 61.

course, treated precisely in the same way, and a note of the correction of its error entered on the other side of the page in the case book.

In the case of *compound myopic astigmatism*, and also in that of *compound hypermetropic astigmatism*, the procedure is just as easy as in the simple ones. Instead, however, of one meridian being emmetropic and the other myopic or hypermetropic, as the case may be, both meridians are either myopic or hypermetropic—one more so than the other. The surgeon must then estimate each meridianal error separately. For example, he may find in a case of *compound myopic astigmatism* that one meridian shows an error of — 1 D., and the other an error of — 2 D., the axis of the cylinder requiring to be placed at 170°. This would be noted as in *Fig.* 62. The lenses to correct this error would naturally be Sph.— 1 D. (which would completely correct the horizontal meridian and a portion of the vertical also, since a Sph. lens acts in *all* meridians) to which must be added cyl. — 1 D. to correct the portion of error in the vertical meridian left uncorrected by the Sph. — 1 D.

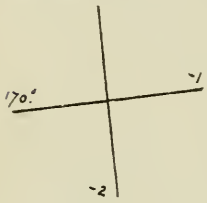


Fig. 62.

Similarly in a case of *compound hypermetropic astigmatism*, a patient may have an eye with 1·5 D. of error horizontally and only 1 D. vertically. The note made in such a case would be written as in the annexed diagram, where it is assumed that the axis of the cylinder must be set at 80° (*Fig.* 63). The correcting lens would naturally be Sph. + 1 D. (which would leave 0·5 D. of the horizontal error uncorrected), and cylinder + 0·5 D. to complete the correction.

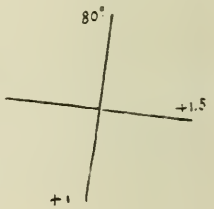


Fig. 63.

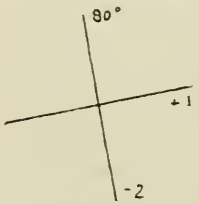


Fig. 64.

Lastly, we may have *mixed astigmatism*. In this anomaly the refraction is myopic in one meridian and hypermetropic in the other. With the mirror, and using spherical lenses as before, we compute first the amount of error in one principal meridian, and then the amount of error in the other. Supposing, for example, that it were found that in the more vertical meridian the error was —2 D., and in the more horizontal one + 1 D, we should, according to the methods already explained, note the fact as in the diagram (*Fig.* 64).

PLATE XXV.

TEST-TYPES

Arranged and Supplied for the *Medical Annual* by

CURRY & PAXTON,

Manufacturing Opticians,

195, GREAT PORTLAND STREET, LONDON;

Also at LIVERPOOL and BRISTOL.

Corresponding to the "Schrift-Scalen" of Prof. E. JAEGER.

The numbers on the left approximate those calculated by Prof. SNELLEN.

No. 1—Diamond.

On the sixth day we came to Yarmouth Roads, and here we had to lie to for several days, for it blew a terrible storm indeed. The master was vigilant in preserving the ship, yet, as he went in and out of his cabin, I could hear him repeat softly to himself, "Lord, have mercy upon us! we shall all be lost!" for the sea ran mountains high. Towards evening the mate and the boatswain begged the master to let them cut away the foremast; and when they had done this, the mainmast stood so loose and shaking that they were obliged to cut away that also, for our ship was deep-laden, and wallowed in the sea, so that the seamen cried out that she would founder, and we were indeed soon obliged to take to the boat, and leave her. With the greatest difficulty and danger we made our way to the shore, where a number of people were running along the strand, ready to help us as soon as we

0.5 *No. 2—Pearl.*

The others were all taken away up the country to become slaves to the Emperor of Morocco; but the pirate captain kept me as his prize, and as I was young and nimble he made me his slave. He left me on shore to look after his little garden, and do common drudgery about the house; but whenever he came home he sent me on board in the port, to sleep in the cabin and look after the ship. Here I meditated on nothing but my escape; but, alas! I was single-handed, and for two years I never had the least chance of putting my hopes into practice. At length the pirate captain remained at home longer than usual, for his ship needed repairs, and money was lacking to fit it out; and so, to pass the time, he used, once or twice a week, to take the ship's pinnace and go out

0.6 *No. 4—Minion.*

And now, increasing in business and in wealth, my head began to be full of projects and undertakings beyond my reach; such as are, indeed, often the ruin of the best heads in business. Just as I had once broken away from my parents, so I could not be content now, but I must needs go and leave the hopes I had of being a rich and thriving man in my plantations, only to pursue a rash and immoderate desire of rising faster than the nature of the thing admitted. During the four years I spent in the Brazils I had made many acquaintances

No. 6—*Bourgeois.*

A little after noon the sea was very calm, and the tide had ebbed so far out that only a quarter of a mile of water lay between me and the ship. So I swam boldly out, and managed, by the help of a piece of hanging rope, to get on board. There was a good deal of water in the hold, but the ship herself was so intact that I thought if only we had kept on board yesterday we might now all be alive. A dog and two cats were the only living creatures left. The provisions were

No. 8—*Small Pica.*

All this time I went out every day with my gun, and shot several wild birds and some goats and rabbits for food, and some wild cats for their skins. Every creature I shot I preserved the skin of, whether its flesh was fit to eat or not. One day I shot at a young kid, and only lamed it ; so I took it home, bound up its leg and tended it, and before

No. 10—*Pica.*

I was making one day a journey of observation in a distant part of the island, when, as I walked along the sandy shore, I was suddenly surprised to see the print of a man's naked foot on the sand. I stood as one thunderstruck, and as if I had seen an

No. 12—*English.*

But I must confess that I made more haste out than I did in, when, looking farther into the cave, which was perfectly dark, I saw two broad shining eyes of some creature, whether man or

(assuming that the axis of the cylinder necessitated its being set at 80°), and the correcting lenses would be Sph. — 2 D. (which would *correct* the vertical error, and would at the same time *increase* the horizontal error by 2 D., making it 3 D.) and cyl. + 3 D.

Practice and patience are of course necessary in order to become an expert and rapid retinoscopist. Mr. Adams Frost's artificial eye is an inexpensive and most useful little apparatus for practice. All the ordinary errors of refraction can be readily reproduced, and experience gained in their estimation.

PRESBYOPIA.—As before mentioned, *presbyopia* is the inability to clearly see near objects by reason of the difficulty of rendering the crystalline lens sufficiently convex—a difficulty which increases steadily with age. This process commences quite early in life, but it is only when the eye can no longer see the smallest type of the Near Types at 22 cm. that *presbyopia* is manifest. A normal eye can still see No. 1 of the Near Types (*Plate XXV*) at this distance at the age of forty, but at forty-five years of age the same eye would require the help of a Sph.+ 1 D. lens to do so. There are, of course, many exceptions to the rule even in normal eyes, and it should be looked upon more as a guide than a law. When *hypermetropia* or *myopia* is present these errors must be allowed for.

The following table shows the lens which usually enables a normal eye to see No. 1 Type at 22 cm. at various ages :—

AGE	LENS	AGE	LENS
45 years	Sph. + 1 D.	65 years	Sph. + 4·5 D.
50 ,,	,, 2 ,,	70 ,,	,, 5·5 ,,
55 ,,	,, 3 ,,	75 ,,	,, 6 ,,
60 ,,	,, 4 ,,		

For example, a person of fifty-five years of age with normal refraction, able to see $\frac{6}{6}$ with each eye, can only see small print at arm's length. But with Sph. + 3 D. in front of each eye that person will be able to read the smallest print at 22 cm. It is often sufficient to order somewhat less than the full correction, because 22 cm. is too near the face for continued use of the eyes. If the patient can see the No. 1 print easily at about 16 inches with Sph. + 2·5 D. this power would probably prove more comfortable. That, however, must in some measure be left to the patient.

If *hypermetropia* or *myopia*, or, indeed, any error of refraction be present, that error must be neutralised by appropriate lenses (see preceding section) and the presbyopic correction *added* to any such correction for distance.

Thus, a patient fifty years of age, having *myopia* of 2 D. in each eye, and therefore requiring Sph.— 2 D. to correct distant vision, and

(by the table) Sph. + 2 to correct *presbyopia*, would require no glasses for reading, the Sph. + 2 D. being neutralised by the Sph. — 2 D. of refractive error.

Or a person, aged forty-five years, having in the right eye *hypermetropia* to the extent of 1 D., and in the left eye *hypermetropia* to the extent of 1·5 D., would need for reading the *addition* of + 1 D. to each distance lens, *viz.*, for right eye Sph. + 2 D., and for left eye Sph. + 2·5 D.

If *astigmatism* exists, the rule of *adding* the presbyopic correction still holds good. Suppose a case where the distant correction is :—

R. { Sph. + 1 D. / Cyl. − 2 D. } L. { Sph. + 1 D / Cyl. + 0·5 D. }

and the age of the person is sixty, the reading glasses required would probably be :—

R. { Sph. + 5 D. / Cyl. − 2 D. } L. { Sph. + 5 D. / Cyl. + 0·5 D. }

From what has gone before it is therefore evident that the distant vision must first be properly corrected if necessary, and then the additional power *added* to the distant correction according to age. Myopes under the age of forty-five often require reading glasses as well as distance glasses. The reason of this is that if myopia has not been corrected, or only partially corrected, the patient can usually see to read ordinary print with little or no effort of accommodation. A long-continued disuse of the ciliary muscles disables them to a great extent. So that if such a myope be fitted with fully correcting lenses for distance—rendering the eyes emmetropic—accommodation will be required to be exerted when looking at near objects, and this he cannot do properly. He is, in fact, very much in the position of a person considerably older than himself, and must be treated as a presbyope. No hard and fast rule can be laid down in such cases, but a certain reduction from the power of the distance lenses should be made sufficient to allow No. 1 Type to be seen comfortably at a fair distance from the face.

Convergence.—When the eyes are directed to a distant object the visual axes are practically parallel, but when the eyes are looking at a near object, such as a book held in the hand, the internal recti automatically contract and converge the visual axes. This is what should take place in well-constituted eyes; for accommodation and convergence are brought into play by one and the same effort of will. Hypermetropes who do not wear correcting lenses must exert more effort of accommodation than emmetropes in looking at near objects. They are often unable to prevent a corresponding amount of con-

vergence from taking place, and consequently it happens that internal strabismus sometimes results. If this defect has not been established too long, and the squint is not "fixed," correcting the hypermetropia will generally cure it, especially in children.

On the other hand, myopes who have but little power of accommodation often lose the power of convergence to a considerable degree.

While treating both these squints with correcting lenses, it is advisable to make the patient use the squinting eye for an hour or two daily, the other eye being covered with a patch of cardboard or celluloid, kept in place by a piece of elastic round the head.

If, however, after a few weeks of treatment no improvement be observed, a prism may be added to the reading spectacles. The effect of a prism on a ray of light passing through it is, as will be remembered, to deflect the course of that ray towards the base of the prism. So that when a patient cannot converge his visual axes sufficiently for sustained reading, and binocular vision is rendered difficult or impossible, a prism with its base towards the nose will certainly afford some help.

The exact degree of the prism required must be a matter of experiment. Broadly speaking, the *less* prismatic assistance is given the better, particularly in the case of young people, who may, under favourable circumstances, regain some of the loss of power in the internal recti. This loss of power is often spoken of as *insufficiency* of the internal recti.

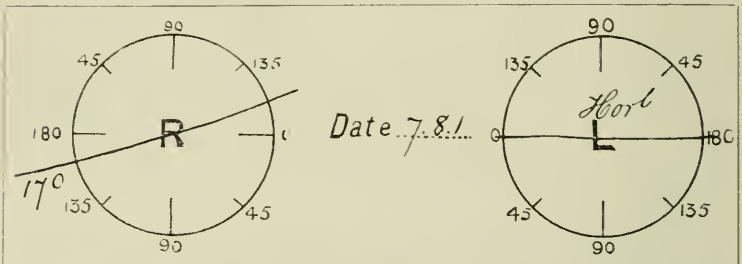
Instead of using prisms in cases where insufficiency is but trifling, the lenses when *plus* may be brought somewhat closer to each other, so that the patient looks through the outer portions of the lenses; or when the lenses are *minus* they may be separated a trifle so that the patient looks through the inner portions of the lenses. This is called *decentrating* the lenses.

Glasses intended for correcting distant vision should be made so that the planes of the lenses set fairly vertically; but in reading spectacles it is better to incline the planes at a slight angle—the upper edges of the lenses being a little farther from the face than the lower edges—because these glasses are mostly used while the patient is looking somewhat downwards. In both cases they should be worn as near the eyes as possible without touching the lashes.

Folding glasses of the common *pince-nez* type are not good, the planes of the two lenses seldom remaining parallel; and in the case of astigmatic lenses they are decidedly bad, for the spring connecting the two ovals is apt to yield, and thus the correct position of the axes of the cylinders is not maintained. *Astigmatism nippers* are far

better; but there is no doubt that spectacle frames offer a much steadier support to the lenses than any other contrivance, and are therefore preferable in most cases.

PRESCRIBING SPECTACLES.—Manufacturing opticians usually provide prescription cards for the use of medical men. They are, of course, not essential, but they are convenient. They vary somewhat in form, but the subjoined one (*Fig.* 65), filled in with an imaginary prescription for a patient suffering from *compound myopic astigmatism*, *insufficiency* and *presbyopia*, will serve as a fair model :—



	SPH.	CYL.	PRS.	SPH.	CYL.	PRS.
CONSTANT						
DISTANCE	— 1 D.	— 1·5 D.		— 1·5 D.	— 1 D.	
READING	+ 2 D.	— 1·5 D.	1° Base in	+ 1·5 D.	— 1 D.	1° Base in

Fig. 65: Prescription Card.

In conclusion, the reader will understand that what has been brought before him does not in any way exhaust the subject, but is merely a sketch of the routine of practice which may enable the general practitioner to surmount some of the initial difficulties usually encountered by beginners.

WATER ITCH (Pani-ghao). *James Cantlie, M.B., F.R.C.S.*

Under the names of Pani-ghao—water sore—sore feet, an interesting anonymous paper[1] gives a systematic account of, and several illustrations of, this ailment. The writer gained his information whilst acting as medical officer to a tea-estate in Assam, where the coolies in the State suffered from this specific form of sore feet.

Three varieties of the disease are distinguished: (*a*,) The vesicular or pustular; (*b*,) The herpetiform; and (3,) The interdigital. The symptoms are at first intense itching, with a little pain; on the second day, the foot swells, and an eruption appears; walking becomes painful. If at this stage the foot is rested and rendered aseptic, the parts speedily heal; but if the condition is neglected, abscesses and ulcers develop, the latter becoming chronic sores if unattended.

ETIOLOGY.—On coolies working in tea-gardens the disease has been mostly observed. They go bare-footed, and during the rainy season when the garden is like a ploughed field the skin of the feet gets sodden. A. B. Dalgetty[2] states that he found in the vesicles the ova of an acarus and even the live acarus itself. This observer gives the life history of the parasite: (1,) The ovum is ellipsoidal, 40 *μ*. in length, 20 *μ*. in breadth, and of a greyish hue, centrally darker towards the periphery; (2,) After six to eight days the embryo hatches; a six-legged larva appears with a stout bristle on either side of the body, but with no sexual organs; (3,) The six-legged larva feeds for two or three days and then settles down into a quiescent state—the second ovum stage (nympha)—and assumes an ellipsoidal shape again; (4,) In two or three days the nympha changes and a perfect four-legged parasite is gradually developed.

Osborne Browne[3] states that a disease similar to that met with in the Assam tea estates is met with in British Honduras under the name of "ground itch."

TREATMENT.—The *preventive* treatment of pani-ghao consists in covering the feet of coolies working in the sodden ground. As this, however, involves expense, it is difficult to get the tea-planters to recognise the importance of incurring it. Wearing wooden clogs, which raise the feet above the soil, lessens the prevalence of the disease, but only complete protection of the foot, ankle, and lower part of the leg will ensure absolute prevention. Washing the feet with oily substances and with several lotions also diminishes the extent of the ailment. **Coal-tar** smeared on the feet also serves as a prophylactic. Surgical treatment consists in allaying the irritation and swelling of the feet by fomentations of boracic lint or some similar application; and pricking the vesicles and opening the small abscesses when they occur. An application of a strong solution of **Lime and Sulphur** usually cuts short the malady if applied early.

REFERENCES.—[1] *Jour. Trop. Med.*, Dec., 1900; [2] *Ibid.*, March 1 1901; [3] *Ibid.*, Feb. 15, 1901.

WOUNDS (Closing without Suture).

Priestley Leech, M.D., F.R.C.S.

Bretz[1] suggests the following method:—The wound is cleaned and prepared in the usual way; a piece of rubber adhesive plaster is applied on either side of the wound, the size of plaster being determined by the size of the wound, but it must be sufficiently broad to give ample area for adhesion not less than a quarter of an inch broad. Raise the inner edges of the adhesive strips and pass interrupted sutures through them instead of through the skin, draw together and tie. The wound is then dressed in the usual way. The advantages are, it prevents the pain of inserting stitches; no stitch-hole abscesses and no stitch marks; a stitch may be taken out and replaced in a different position, and the wound is open for inspection. If the skin is hairy it must be closely shaved.

REFERENCE.—[1] *Med. and Surg. Monitor*, Dec., 1900.

XERODERMA PIGMENTOSUM. *Norman Walker, M.D.*

Four new cases are recorded by Herxheimer and Hildebrand,[1] making over one hundred cases now on record. Their cases are of interest, for they show that the disease is not so necessarily fatal as we have been in the habit of thinking. One of them began at the age of thirty, and is now, apparently about ten years later, still doing his work.

The second and third cases are a little exceptional, in that a brother and sister were both attacked in early childhood. Malignant growths developed up to the age of puberty. These were removed, and no fresh ones have appeared. The brother has married and has two healthy children. The authors seem to suggest that there comes a stage when the malignant growths cease to develop, and that if the patient can be tided over that a fatal result is not inevitable. It is interesting to recall in this connection that other diseases due to the sun rays also tend to disappear after puberty, notably hydroa puerorum.

REFERENCE.—[1] *Münch. Med. Woch.*, No. 32, 1900.

X-RAYS. *John Macintyre, M.B., C.M., F.R.S.E., M.I.E.E.*

One of the most noticeable features of X-ray work during the past year has been the greatly increased use made of it in civil and military hospitals and in general practice. If it cannot be said that any great novelty or advance has been registered, there is abundant evidence in the different medical journals in all countries of continued earnest work. Perhaps the most interesting feature is the great amount of experimental work which has been carried out at the

bedside ; for there can be no longer any doubt, however we may explain the facts, that beneficial results have followed the use of the X-rays in lupus, rodent ulcer, and other diseases which from their superficial origin can come directly under the influence of the X-ray tube. The therapeutic action of the X-rays received more attention at first on the Continent ; but now great activity prevails both in this country and America, and it is interesting to note that this is accompanied by a corresponding increase in clinical research in connection with the action of light waves, high-frequency and high-potential currents, and radio-active substances. Some day it is to be hoped that the relation of these to each other for medical purposes will be determined.

Readers interested in the matter will find valuable information in the Archives of the Röntgen Society, and also in a work entitled *Röntgen Therapy*, by Dr. E. Schiff, Vienna (translated by W. Dean Butcher, M.R.C.S.), and published by Messrs. Rebman, Lim. London.

APPARATUS.—*Current.*—X-ray workers in many places have been considerably embarrassed by the different currents from the main placed at their disposal by corporations and similar bodies. The commonest difficulty of all is the alternating current, and workers with these will be pleased to learn that a considerable amount of attention has been paid to the question of rectifiers. Three forms of these have been completed, and were shown at a meeting of the London Röntgen Society last March, by Drs. Batten, E. B. Morton, and Mr. A. W. Marshall.

Coils.—Isenthal & Co. have been showing a new induction coil with a closed iron core. So far the results have shown no great advantage in its use in X-ray work for medical purposes, although it has not yet been fully tested. Messrs. Cox have been adopting thick primary wires in their coil, in order that they may be able to take heavy currents through them. This has the advantage of enabling one to do with smaller coils, measured at least by the length of spark, but there can be no doubt, as pointed out in previous years, that the tendency is towards the employment of much larger coils than was the custom five years ago.

Interrupters.—Dawson Turner has during the present year described a new form of interrupter, but so far, in this country at least, some form of the old rotating mercury, Mackenzie Davidson's improved instrument, or the Wehnelt, is most commonly employed.

Tubes.—A considerable number of different kinds of Crookes' tubes have been presented, but one of the most interesting facts

elicited during the present year was due to the competition for the Gold Medal presented by the President of the London Röntgen Society. The conditions laid down by the Society were specially drawn up with a view to discover what tubes would be useful to medical men. Amongst the judges were Sir William Crookes and Mr. Herbert Jackson, and the award was given for the best results on the screen, photographic power, penetration, and definition, while the cost of the tube was also to be a factor, if not a prominent one, in coming to a conclusion. Twenty-eight different makers sent in examples of their work, a number being from America, a still larger number from Germany, and some from this country. While many of the tubes were excellent, a large percentage of them were rejected on account of their deficiency in definition, and particular attention was paid to this fact, because some tubes were otherwise magnificent specimens of workmanship. Mr. H. Müller, of Hamburg, was awarded the medal for the specimen now known as Cox's Record tube, which it is gratifying to know was also amongst the cheapest of those sent in.

Application in Diagnosis.—*Renal and other Calculi.*—Amongst the most successful workers in this country is Shenton, whose work is distinguished by the short exposures which he gives when taking photographs, and by the excellent definition. His work has been largely recorded in the Archives of the Röntgen Society. Lenard, of Philadelphia, has also been doing excellent work on the other side of the Atlantic, and by attention to details has been able to throw much light upon not only diagnosis of the presence of calculi, but also of their situation, whether in the kidney, ureter, or bladder. He maintains that not only can a stone be diagnosed, but (what is as important) he can make certain of a negative result; that is to say, where he finds no evidence of a stone, there *is* none present. Another important element in his work relates to the view to be taken about operative procedures; for he states that by following out and carefully observing cases from time to time he has been able to prevent operation, where "symptoms" might have tempted the surgeon to interfere unnecessarily. In some cases, for instance, the stones were passed in the ordinary way; in other cases they were found to exist not in the kidney, as diagnosed, but in the ureters and elsewhere, at considerable distances from the suspected organ.

Diseases of the Chest.—Hugh Walsham has published some papers, and gave a demonstration at the Röntgen Society last year, on thoracic aneurysm, changes in the heart, and other lesions in this region. The possibility of confirming what can be discovered by

other methods of diagnosis is quite evident, and the possibility, in some cases at least, of detecting at an early stage what cannot be made out without the X-rays, was suggested. The facts placed before the meeting go far to prove this view.

THERAPEUTICS.—Greater attention than ever is being paid to the action of X-rays upon diseased tissues, and with a considerable amount of success. Moreover, other ether-waves have also been very carefully studied, in the hope that they also may produce similar equally beneficial results. In fact, the discovery of the X-rays has stimulated research in new departments, such as radio-active substances, and also in some of the older methods of electro-therapeutics, such as D'Arsonval's modification of Tesla's high frequency currents as applied to medicine. Further, it has been shown during the past year that electric discharges from the Wimshurst machine are not unlikely to play a part in therapeutics, and in affections where they had not hitherto been tried. If one thinks of these different agencies, some of which are evidently capable of producing similar results in the same diseases, as in the employment of ultra-violet rays by Finsen, one cannot fail to perceive that it would be most important if the relationship between these different agents could be established. The question of *how* these forces act has again been raised; and Staff-Surgeon Bassett-Smith has been making further experiments on the same lines as Wolfenden and Forbes-Ross, whose careful work is so well known. He has come to the conclusion that exposure of the organisms in solution to sunlight or X-rays is not likely to act as a destructive agent to the germ of typhoid or Malta fever, although sunlight by itself seems to be able to control the organisms of plague in nutrient broth cultures. The X-rays have probably a slight power of inhibition, although they do not destroy the organisms. This is much the same result as Wolfenden and Forbes-Ross obtained, but in their experiments the tubercular bacillus was not destroyed by the X-rays. In view of the work being now carried out in connection with lupus, this fact is important, and all writers at present seem to think that the therapeutic action is due in some way to stimulation of those vital forces whose function is to destroy or cast out pathogenic organisms.

Lupus.—The greatest attention probably is being paid at present to the cure of patients suffering from lupus. Schiff, whose early work, as well as Freund's, attracted so much attention, has now published important papers. He thinks that in the treatment of lupus the violent inflammation is set up in the deeper tissues of the skin, but the inflammation heals up much more quickly than the

dermatitis which often occurs accidentally during treatment, say for epilation. Fortunately we can graduate the dose, as he puts it, by the strength of the X-rays themselves and the intensity of the application. In lupus cases the reaction always runs the same course; the nodules becoming dark red and turgescent, dark spots developing in places which are apparently quite normal, and taking on the character of nodules. In time, as the treatment is continued, the nodules drop out, leaving well-defined holes as if punched out. Schiff, while admitting that the results of Finsen's method correspond to those of the Röntgen rays, thinks the latter process much simpler, and recommends it on the ground that the X-rays can attack a larger area. The advantages in the treatment of lupus have also been pointed out on the Continent by Kümmel, of Hamburg, and Mushan, and in this country Miss Sharpe (who opened an excellent discussion on this subject in the London Röntgen Society, and who has been most successful in her work), Dr. Sequeira, and others. The latter holds that dermatitis can be avoided during treatment, and at the London Hospital hard tubes alone are used. Lupus of the skin has been most commonly treated, but Schiff thinks that the mucous membranes of the lips and nose readily react to this agent. The last-mentioned writer, while strongly advocating X-rays in the treatment of lupus, and considering this the ideal method, says that when we have to deal with circumscribed patches of lupus in an easily accessible position, it would be absurd to attack the isolated nodules by this agent for a period probably of months, when an equally favourable result might be obtained by extirpation in a few days. (See also article "Tuberculosis of Skin.")

Lupus Erythematosus.—Schiff, Jutassy, Hahn and Grouven have reported cases in which X-rays have proved successful in the treatment of patients suffering from this affection.

Eczema and Psoriasis.—Hahn, who first applied this treatment in 1899, has been followed by others in his experimental work, and it is claimed that in some cases favourable results have been obtained in chronic eczema. Although sufficient time has not yet elapsed to speak positively, Tiemssen, Albers-Schönberg, and Hahn are also inclined to think that the X-rays exert a favourable influence on patches of psoriasis.

Hypertrichosis.—Epilation by means of X-rays has been tried with considerable success. Freund first applied this agent for this condition, but Schiff, Jutassy, Albers-Schönberg, and Miss Sharpe have also been successful. The opinion seems to prevail that now we have better control of the rays dermatitis can be avoided to a

very great extent, while we are able to destroy the hair bulb for ever Schiff at least answers this question very positively, after observations extending over more than three years.

Experiments have been made in other affections of the skin. Thus Sorel and Soret have tried these rays with success in their treatment of elephantiasis. Sequeira, Startin, Sjögren and Sederholm have reported successful cases of rodent ulcer. Stenbek, of Stockholm, reports good results in deep epithelioma of the nose. Nævus, acne, rosacea, varicose ulcers, and acne vulgaris are amongst the affections in which X-rays have been tried with some promise of success.

YELLOW FEVER. *James Cantlie, M.B., F.R.C.S.*

The Bacteriology of Yellow Fever.—The Board of American medical officers appointed to investigate yellow fever in Cuba[1] came to the conclusion: (1.) "That the bacillus icteroides (Sanarelli) stands in no causative relation to yellow fever." This conclusion was arrived at after careful investigations, on the living and in the bodies of those who died of yellow fever; (2.) "The mosquito serves as the intermediate host for the parasite of yellow fever, and it is highly probable that the disease is only propagated through the bite of this insect." This theory formulated by Finlay gains support everywhere. The mosquito experimented with was the *Culex fasciatus*. These mosquitoes were allowed to feed on persons suffering from yellow fever, and then allowed to bite eleven non-immune persons. Positive results ensued in two instances, but at the time only three cases of yellow fever occurred among the white population of 1,400 non-immune individuals; however *two of these* were of the eleven experimentally bitten. The argument in favour of transmission by mosquitoes was advanced by the researches.

The report of H. G. Durham and the late Walter Myers[2] to the Liverpool School of Tropical Medicine states that they found a small bacillus in all the fatal cases of yellow fever they examined. The bacillus takes up stains so reluctantly, and cultivation results are so tardy, that it is possible other observers have overlooked the bacillus. No protozoa were found which could in any way be interpreted as the cause of the disease. These interesting experiments were cut short by both observers contracting the disease, to which Dr. Myers unfortunately succumbed.

REFERENCES.—[1] *Treatment*, Jan. 1, 1901; [2] *Lancet*, Feb. 23, 1901.

PART III.—MISCELLANEOUS.

Sanitary Science, 1901.

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PREVENTION OF TUBERCULOSIS.

The year 1901 will long be remembered as the year in which the British Congress on Tuberculosis was held in London. Three important addresses were delivered, and many interesting papers read and discussed. The feature of the Congress was Prof. Koch's address on "The combating of tuberculosis, in the light of the experience that has been gained in the successful combating of other infectious diseases." Prof. Koch made the startling statement that bovine and human tuberculosis are different diseases, and, practically, not intercommunicable. In other words, that the bacillus of bovine tuberculosis is not the same as that of the human disease, and that the bacilli from the latter will not infect cattle. By those who have had any experience in the subject, it will be admitted that there is a good deal to be said on the other side, and the very few experiments (only nineteen young cattle and six young swine experimented upon) mentioned by Prof. Koch, are certainly not sufficient to settle the point. Even assuming that Prof. Koch's few experiments proved his case, *viz.*, that experimentally it is impossible to graft the human disease on to cattle, the converse does not by any means follow, *viz.*, that the bovine disease cannot be grafted on to man. The literature of the disease appears to point to the opposite conclusion. In any case the subject is one that calls urgently for a Governmental enquiry, and it is satisfactory to be able to report that a Royal Commission consisting of Sir M. Foster, Prof. G. Sims-Woodhead, Dr. Sidney Martin, Prof. John McFadyean, and Prof. Rubert Boyce has been appointed. The German Government, too, has appointed a Commission, whilst experiments are being conducted in certain of the American States, and the Council of the Royal Agricultural Society has made a grant for special research—all dealing with the same subject.

The point at issue is a most vital one, and must be settled once and for all; otherwise the statement as made by Prof. Koch, to the effect that, in his opinion, stringent measures need no longer be taken with regard to meat inspection and milk pasteurisation or sterilisation, are calculated to do much harm, and to render sanitary

authorities and their officers somewhat lax in connection with the protecting of meat and milk supplies from contamination with the bacillus tuberculosis. In the past, much energy and money have been expended in this direction, and much hardship imposed upon dairymen, butchers and others. The general feeling of the Congress was that, whether the Koch theory were true or not, it was undesirable that meat or milk, when asked for, should be offered accompanied with bacilli of tuberculosis, or any other disease—a statement with which all people must agree. Tubercle-infected milk is certainly not of the "nature, quality, and substance demanded," and so may come to be dealt with under the Food and Drugs (Adulteration) Acts.

As it was felt that this outcome of the address was unavoidable, and that local authorities might be lax in dealing with tuberculous meat and milk, the Local Government Board was approached, with the result that a letter was issued by the Board on Sept. 6th to the various local authorities in England and Wales, impressing upon them that, pending the investigations and report of the Royal Commission, there should be no relaxation on their part, or on the part of their officers, in the taking of proper measures for dealing with tuberculous meat and milk, intended for the food of man. The letter also states that the principles laid down by the last Royal Commission on Tuberculosis (published in 1898) are to be the guide of officials in connection with the condemnation of tuberculous meat, so as to secure uniformity of action by all officers of local authorities. Lastly, the importance of meat inspectors being properly qualified, and of such inspectors consulting the Medical Officer of Health in all cases of doubt, is emphasised.

With regard to the notification of phthisis (consumption) all agreed that a voluntary or optional system, such as that in operation at Brighton, Manchester, etc., was much to be desired, and would undoubtedly assist in enabling authorities to teach the people the danger of the disease, and the importance of simple preventive measures being taken. Notification has proved invaluable in combating infectious diseases, giving certain knowledge as to their state, especially their dissemination, their increase and decrease, showing where help and instruction can be given, and where disinfection can with most advantage be effected (more especially when consumptives die, or change their residences). All cases of tuberculosis need not be notified, nor even all cases of consumption, but only those that are sources of danger owing to domestic conditions. Such a limited notification must be optional.

During 1901, a new law has been passed in Norway making compulsory the notification of cases of, and deaths from, tubercular lesions attended with secretions; the medical attendants to give instructions as to precautions, and to enforce the same, or, in the event of such precautions not being carried out, to report to the local Sanitary Commissioner to enable the President to take charge, or to remove patients to infirmary. Compulsory disinfection of rooms, beddings, wearing apparel, etc., after death, or change of abode, is insisted

upon. Further, the new law prohibits a dangerous (tubercular) person being a wet-nurse, or servant, or from taking part in preparation of food intended for sale, and the sale of milk from places where such persons take part in the tending of cattle, or in the management of the dairy. Special precautions may be made in reference to workshops, hotels, churches, and public places, as may be found from time to time necessary.

NEW STATISTICAL TABLES.

In connection with the classification of death-returns, important alterations have been made by the Local Government Board with a view to facilitating record of a minimum amount of statistical information of the kind desired by the Board. New tables (numbered I. II. III. IV.) take the place of the old tables (numbered A, B), and are simpler in design, more complete, and will be found to be a great improvement. The tables explain themselves, and are already in the hands of all medical Officers of Health.

In classifying the causes of death, important alterations have also been made, embodying all existing medical knowledge, improvements laid down by the International Commission of Statistics, and the tables used by the Registrar-General; thus assisting international comparison of statistics.

DEATHS FROM EPIDEMIC DIARRHŒA.

In the certification and classification of "diarrhœa" deaths, chaos has existed hitherto. The matter has been recently considered by the Royal College of Physicians of London, and certain suggestions offered, which, if acted upon loyally by medical men throughout the country, in granting certificates of death, cannot fail to greatly improve the national records of mortality from this disease. The suggestions are as folows:—

(1), *All* deaths directly due to (epidemic) diarrhœa to be certified as epidemic diarrhœa, epidemic enteritis, or zymotic enteritis; (2), Such terms as "gastro-enteritis," "muco-enteritis," "gastric catarrh," to be no longer used as synonyms for epidemic diarrhœa.

Epidemic, or what is known popularly as summer diarrhœa, is a general disease of specific character in the same sense as enteric or others fevers, occurring in persons of all ages, and in other than epidemic seasons, and causing a large proportion (about one-fourth) of the deaths attributed to zymotic diseases.

Many different terms are employed to designate the disease, whereby its specific character is in danger of being ignored, and great confusion consequently ensues—a serious and important matter. Diarrhœa mortality returns are of exceptional value and importance for sanitary purposes; and to enable the prevalence of the disease in special places, or at special times, to be accurately determined, it is of the greatest importance that more exact nomenclature should be adopted.

DRAIN TESTING.

Most of the ordinary drain tests are misleading: there are tests and tests. Take, for instance, the smoke, smell, or chemical test. Where a result is obtained, we may be sure that the drainage system under examination is wrong. Where no result is obtained, we cannot state that, therefore, the drains are right. Such tests, and there are many different kinds advertised, are *negative*, and consequently unreliable. Not so, however, with the water (hydraulic) and air (pneumatic) tests. In the former case, the drainage system is filled with water under pressure, and in the latter, with compressed air. If the water pressure or the air pressure remains, there is an absolutely certain proof that the drainage system (under examination) is water- or air-tight (*i.e.*, we are sure that water or air has not escaped).

With a large head of water, the pressure is very great, and varies at different points in the drainage system, so that even this hydraulic test is not wholly satisfactory; whilst the difficulty of testing vertical pipes with water must be apparent to all who have had practical experience in drain testing. The water test cannot be graduated. The result is a *positive* one, however, and consequently the hydraulic test is superior to all the so-called smoke, smell, or chemical tests.

The pneumatic test is also a positive one, but is better than the hydraulic test owing to the fact that the pressure of air on the whole drainage system (under examination) is graduated, and equalised throughout, and may be made to vary in pressure from a fraction of an inch of water to a number of feet of water. Further, its application is easy, but it does not localise the defect or defects. The pneumatic test is so delicate that even fireclay and stoneware pipes will hardly stand it. It consequently ensures a very high standard of drainage work, as well as of materials used.

ANTITOXIN AS A PROPHYLACTIC.

During the year, statistics have again accumulated showing the value of antitoxin as a remedy for diphtheria, and a sure remedy if given sufficiently early in the fever. This is now admitted by all experienced medical men, but recently another important value of the antitoxin has been emphasised, *viz.*, its value as a prophylactic or preventive. Children and others exposed to diphtheria are to be injected with small doses, 500 to 800 units per dose, and it is best that such injections should be made between the scapulæ. In this way susceptible persons, who have been in close proximity to a diphtheria patient, or may have to reside in a house in which diphtheria exists, will be much less likely to catch the disease. In America, the antitoxin has been largely used as a prophylactic, and with great success.

WATER SUPPLIES AND RIVER POLLUTION.

The importance of providing pure water supplies and preventing river pollution was emphasised at a conference arranged by the

Council of the Sanitary Institute, and held in London during the year. Many different papers were read dealing with a variety of subjects, much discussion took place, and finally it was decided, by resolutions, that the purity of water supplies throughout the country can only be effectively secured by placing such supplies in the hands of representative bodies directly responsible. Further, that the County Councils should have large powers of supervision and control in respect to the question of water supply in their respective county areas, and that such County Councils should be urged to investigate the existing conditions of the water supplies within their districts, *e.g.*, as to quantity and quality, dangers of contamination, etc

A copious supply of pure water is necessary, but London is no nearer obtaining such. Glasgow has its Loch Katrine, Manchester its Thirlmere, Birmingham and Liverpool their own special Welsh schemes; but London, the Metropolis, remains content with a water supply, which cannot in any way be described as copious, and which certainly is of doubtful, very doubtful, purity. For filtration on a large scale, sand (under constant and proper supervision) holds its own against all comers, but the question has been specially raised recently as to domestic filters, on account of a series of experiments that have been made at Netley by Prof. Horrocks, and published in the *British Medical Journal* of June 15, 1901. These experiments go to show that infusorial earth filters allow, if they do not actually favour, the passage of typhoid germs through them within a few days, unless such filters are regularly sterilised in the interval, a process which, for practical purposes, may be left out of the question. Pasteur filters, on the other hand, though simultaneously treated in the same way, and even subjected to much severer tests, in no case allowed the passage of the typhoid germs during the time covered by the experiments (few weeks). The Pasteur filter would at present appear, therefore, to be the standard, and a strict standard too, for domestic filters, regarded from the point of view of the prevention of water-borne diseases. Theoretically, for laboratory experiments this is so; and, practically, it would appear to have been proved by the classical reports presented to the French War Office, the purport of which is to the effect that, in connection with the French army, wherever these Pasteur filters are introduced, typhoid fever disappears, even though at the same time the same fever be prevalent amongst the civil population drinking the same water unfiltered. The same report cannot be made in connection with the English army in South Africa, which has been decimated by typhoid fever, whilst it is known that Pasteur filters were not provided. A probable connection between the absence of Pasteur filters and the prevalence of typhoid fever suggests itself.

In any case, domestic filtration, if efficient, is neither a fad nor a formality, and would seem to be especially necessary for Tommy Atkins in the field. Drs. Louis Parkes and Samuel Rideal have recently suggested that, as in all probability a high degree of mobility will be required in future wars, rendering filtration or boiling of

water for troops impracticable, other means will have to be adopted. As the result of their experiments, they recommend acid bisulphate of soda (15½ grains to a pint of water) in the form of tabloids, to be added to suspected water for a period of not less than fifteen minutes before such water is drunk. In this way, the virulence of the bacillus typhosus is destroyed, or its growth inhibited, without the water being rendered either unpalatable or injurious to the health of the consumers.

Dilute mineral acids (sulphuric or nitro-hydrochloric), and the organic acids (citric, tartaric, etc.), are also recommended. Major W. G. Macpherson, on the other hand, states that purification by single bougie pressure filters has the fewest disadvantages, and that, for mobile troops, filters of this kind, if they are carefully used, and cared for by men trained to look after them, meet most of the practical difficulties of water purification in the field.

METHODS OF SEWAGE DISPOSAL.

The Commissioners appointed in 1898 have issued an interim report in connection with the subject of sewage disposal in the following terms :—

Unsuitable Land.—No land is entirely useless, but in the case of clay and peat lands, the power to purify sewage seems to depend on the depth of the top soil, which must be not less than 6 inches.

Artificial Processes.—It is practicable to produce by artificial means alone, either from sewage or from certain mixtures of sewage and trade refuse, effluents which will not putrefy, and which would be classed as "good," according to ordinary chemical standards, and which might consequently be discharged into a stream without fear of creating a nuisance. As a corollary, it is recommended that the Local Government Board should modify, under proper safeguards, their present strict rules as regards the application of sewage to land, each case being considered on its own merits.

Protection of Rivers.—The simplest possible means are to be adopted for adequately protecting all rivers. This matter of river-protection is one of such grave concern as to demand the creation of a separate Commissioner of a new Department of the Local Government Board, which shall be a supreme Rivers' Authority, dealing with matters relating to rivers and their purification, and which, when appeal is made to them, shall have power to take action in cases where the local authorities have failed to do so.

What standard shall be adopted for a sewage effluent? How is it possible to avoid on the one hand the "ideal" standard of the medical officers, and on the other, the lowest standard of a parsimonious sanitary authority?

The quality of sewage effluents must be judged not only from a chemical but also from a bacteriological point of view. In effluents from suitable land, there are fewer micro-organisms than in effluents from most artificial processes, yet both classes of effluents usually contain large numbers of organisms, many of

which appear to be of intestinal derivation, and some of which are of a kind liable, under certain conditions at least, to give rise to disease. Such effluents are, therefore, potentially dangerous. As the Commissioners will probably not finally report for many years, the *interim* report comes as a grateful present; but much requires to be yet done by the Commissioners.

HOUSING OF THE WORKING CLASSES.

No great advances have been made during the year, but there have appeared in connection with this subject several reports and essays, amongst which may be mentioned the paper of Dr. Sykes, read before the Royal Statistical Society, and a very valuable article by Mr. Charles Booth, which appeared in the *Journal of State Medicine*. The former is academic, the latter practical. Mr. Booth comments upon the outward flow of population in London from centre to periphery, and shows how such flow is closely connected with the means of communication, provided or anticipated. The ground work of the movement is a desire for improved conditions of life, stimulated by overcrowding of population, immigration, demolitions of houses, etc.; and this desire can, and will, only be gratified by improved and cheap means of communication, with the acquisition of vacant land for the construction of houses. It is now more and more insisted upon that the re-housing of persons displaced, or of an equal number, should be made compulsory, though it is well-known that the persons displaced rarely, if ever, occupy the houses built for them—an unfortunate, but well-established fact. It is clear that systematic action against over-crowding, and the closing of insanitary property, ought not to be enforced until means have been provided for housing the displaced tenants. This principle ought to be rigorously insisted upon by all authorities.

As to cheap locomotion, what appears to be wanted is a large and really complete scheme of railways underground and overhead, as well as a network of tram-lines on the surface, providing adequately for short, as well as for long journeys (a system extending beyond the present metropolitan boundaries into the outskirts of London wherever the population has gone, or may go). This means of locomotion must be a monopoly, and such a monopoly ought to be in the hands of a public authority, who will be more likely to look at the whole service in a broad spirit. In regard to the building of houses, private enterprise must be allowed full swing, urged on with the stimulus of competition by a sanitary authority, if necessary.

ISOLATION HOSPITALS AND THEIR PRACTICAL VALUE.

Serious charges have been brought during the year against isolation hospitals from the point of view of isolation in infectious diseases, more especially scarlet fever, and statistics have been produced and put forward that appear to show some ground for assuming that the value to be derived from isolating scarlet fever patients in hospitals is not commensurate with the

enormous cost involved. An endeavour has been made, but without success up to the present, to get the Medical Officers of Health Society, and one or two of the Congresses, to put their *imprimatur* on such charges.

The subject is one that concerns all sanitary authorities, and not the least so, the Metropolitan Borough Councils, comprising the whole of London, and who are called upon to pay large sums of money for each case of infectious disease, isolated and treated in one of the hospitals provided by the Metropolitan Asylums Board, a separate authority from the Borough Councils. If there be any doubt on the subject, an enquiry should be held, and the sooner the better, so that the matter may be settled, if possible, once for all. To burke discussion is always a mistaken policy.

THE "FOURTH DISEASE," AND SCARLET FEVER.

No account of sanitary science during 1901 would be complete without mention being made of what has been termed for want of a better name "The Fourth Disease," *i.e.*, a disease additional to other three diseases, *viz.*, scarlet fever, measles, and German measles. The "fourth disease" closely resembles scarlet fever, and differs from German measles as follows. The rash is not "patchy," but uniform, and finely punctated, similating, if not indistinguishable from, the rash of scarlet fever. It appears on the face, round the mouth first The pulse is not accelerated, and the temperature is not high, whilst throat symptoms are but slight, or even absent altogether. There is no loss of appetite, and little or no feeling of illness. The tongue does not peel on the fourth day as it does in scarlet fever, and there are no sequelæ, though desquamation *may* take place. The incubation of the disease is nine to twenty-one days

Such are the points of differentiation noticed and set forth by those who believe in the existence of this so-called "fourth disease." Others deny that it exists as a separate disease, simply regarding it as modified German measles or scarlet fever.

In regard to scarlet fever, Dr. Houston has confirmed the streptococcus scarlatinæ or conglomeratus as an absolutely distinct micro-organism from the streptococcus medius or pyogenes, and obtainable in pure cultivation from a serous exudation occurring as a complication of scarlet fever, as well as from commoner sources such as the mucous secretion of the tonsils or fauces (where it may remain long after apparent convalescence), the discharges from the nose, etc. It has not as yet been obtained from aural discharge in scarlet fever cases. Dr. Klein some years back discovered this streptococcus as the *causa causans* of scarlet fever; and this independent verification and confirmation by Dr. Houston is noteworthy, as the discovery, if true, will prove of great importance.

PRESERVATIVES IN FOOD.

The Departmental Committee appointed in July, 1899, has reported on the use of preservatives and colouring matters in the preservation and colouring of food as follows :—

(1,) That the use of formaldehyde or formalin, or preparation, thereof, in foods or drinks be absolutely prohibited, and that salicylic acid be not used in a greater proportion than 1 grain per pint in liquid food, and 1 grain per pound in solid food. Its presence in all cases to be declared.

(2,) That the use of any preservative, or colouring matter whatever, in milk offered for sale in the United Kingdom, be constituted an offence under the Sale of Food and Drugs Acts.

(3,) That the only preservative which it shall be lawful to use in cream be boric acid, or mixtures of boric acid and borax, and in amount not exceeding 0·25 per cent expressed as boric acid. The amount of such preservative to be notified by a label on the vessel.

(4.) That the only preservative permitted to be used in butter and margarine, be boric acid, or mixtures of boric acid and borax, to be used in proportion not exceeding 0·5 per cent expressed as boric acid.

(5,) That in the case of all dietetic preparations intended for the use of invalids or infants, chemical preservatives of all kinds be prohibited.

(6,) That the use of copper salts in the so-called greening of preserved foods be prohibited.

(7,) That means be provided, either by the establishment of a separate court of reference, or by the imposition of more direct obligation on the Local Government Board, to exercise supervision over the use of preservatives and colouring matters in foods, and to prepare schedules of such as may be considered inimical to the public health.

The Report is practically unanimous, the only dissent being from Dr. Tunnicliffe, who objects to paragraph 6 on the ground that the copper is in a relatively insoluble and unabsorbable combination with the vegetables, and that, therefore, there is no injury to the consumer—not to mention the minute traces only consumed. Further, great importance attaches to the appetising appearance of food such as is afforded by the perennial use of green vegetables—a fact not to be forgotten.

The committee consisted of four members. There are some (see *Medical Annual*, 1900, page 648) who will not agree with the finding of the committee, having regard to the vast amount of waste which would be liable to occur if preservatives are practically *wholly* discontinued, and also to the slight, if any, injury or danger to health arising from the consumption of infinitesimal quantities.

ARSENIC IN BEER.

The epidemic of arsenical poisoning through beer, which affected chiefly Lancashire and Staffordshire districts, and which was reported in the *Medical Annual* of last year (see page 606) led to the formation of a Royal Commission, the members of which have reported during 1901. They find that there is a risk of alcoholic peripheral neuritis, and possibly other forms of illness, from small

quantities of arsenic in beer, the arsenic being derived from glucose, invert sugar, caramel, etc., as well as from malt, etc.; and such arsenic (even in traces) can, and should, be avoided. The chief source of the arsenic is from the mineral acids employed in the manufacture of invert sugars and of glucose; or through the products of combustion of the fuel used in malting, and from other substances used for various purposes in the manufacture of beer.

The Commission emphasise the difficulty of producing beer that would be *absolutely* free from arsenic, owing to the wide distribution of that element, and the great delicacy of the tests employed; but it suggests a quantity in terms of a standard quantity of beer, and a standard test (to be prescribed by the Board of Inland Revenue). All articles of food (not only beer) must be, as far as possible, arsenic-free.

VENTILATION.

The Council of the Sanitary Institute have published an elaborate and lengthy Report on Cowls and Terminals in relation to Ventilation. The Report represents the work of a special committee that was formed twenty-five years ago, and of which the original members are all dead. It is needless to say that the work has progressed slowly and laboriously; indeed, some may think that the Report ought not to have been published, but to have died with the original members of the committee. Different results appear to have been obtained from different cowls and terminals under various conditions of wind, size and shape, whilst the majority of anemometers and air meters experimented with, proved untrustworthy, more especially when used inside ventilating tubes. Consequently, the Report recommends that each anemometer or air-meter should be standardised when so used.

The President of the Incorporated Society of Medical Officers of Health chose as the subject of his presidential address "Ventilation," dealing with the principles of ventilation, and the different appliances already on the market, and suggesting as a standard ventilation, two parts of CO^2 per 10,000 *in excess of that in the outside air.* Mechanical appliances must be the means for ventilating in the future, and in this connection electrical energy can be readily utilized by ordinary householders. Indeed, mechanical ventilation can be so efficiently controlled that underground offices, lighted by electricity, warmed by the retained heat of the earth, may be far healthier to work in than many a public office above ground at the present day. In this way the President suggested that perhaps a solution of the housing question may be found, *viz.*, in building downwards in the depths, instead of upwards on the mountains.

The old-fashioned but well-known simple methods, *e.g.*, Hinckes-Bird's, Cooper's, Tobin's, etc., have come in for some sharp criticisms, and the ideals of days gone by are fast disappearing. Ventilating

grates appear to hold their own, acting well, and providing in winter a large and cheap body of slightly-warmed air.

A satisfactory and practical method for ventilating tenement houses and work-places remains still undiscovered, and offers scope to rising architects. The position in regard to ventilation to-day is that methods of ventilating buildings should be the subject of mechanical rather than of sanitary science; but unfortunately, up to now, the results which have been obtained are far from satisfactory. In mechanical ventilation, the motive power is supplied (electrically or otherwise) by a fan or equivalent arrangement, which either aspirates ("vacuum" system), or perflates ("plenum" system) air from or into the building. The success of a given ventilating system does not lie merely or mainly with the apparatus used. There has been a great tendency to attribute successes or failures of ventilation to the merits or defects of particular apparatus. The problem of ventilation of a given room is far too complex to be settled in so simple a way. It mainly depends upon an accurate knowledge of the natural forces which will occur to affect the motion of the air, and the mere use of a patented appliance will not supply this. Incessant movement of the air is a law of nature. Methods of warming, and to a less degree also of lighting, are inseparably connected with methods of ventilation.

SALE OF MILK REGULATIONS, 1901.

These regulations have been made by the Board of Agriculture in exercise of the powers conferred on them by section 4 of the Sale of Food and Drugs Act, 1899, and came into operation over the whole of great Britain on Sept. 1, 1901. The regulations are as follow:—

Milk.—(1,) Where a sample of milk (not being milk sold as skimmed, or separated, or condensed milk) contains less than 3 per cent of milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875-1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-fat, or the addition thereto of water.

(2,) Where a sample of milk (not being milk sold as skimmed, or separated, or condensed milk) contains less than 8·5 per cent of milk-solids other than milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875-1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

(3,) *Skimmed or Separated Milk.*—Where a sample of skimmed or separated milk (not being condensed milk) contains less than 9 per cent of milk-solids, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875-1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

The regulations will prove servicable in raising the standard of average or border-line milks, but may prove the opposite in regard to some of the better-class milks, which may be lowered by the wholesale dealers to meet the requirements of the regulations.

FACTORY AND WORKSHOP ACT, 1901.

This new Act comes into force on January 1, 1902. It amends and codifies (and consolidates) all previous existing legislation on the subject of workshops and factories, and puts much additional work on sanitary authorities and their officers. The broad distinction between "Factory" and "Workshop" is the presence, or absence, of steam or other mechanical power, and the sanitation of the former belongs to the Factory Inspector (under the Home Office), and that of the latter is under the various sanitary authorities and their medical officers.

The Act makes it compulsory upon all medical officers to report annually (specifically) on the administration of the Act in connection with workshops and workplaces (whether by Home Office, or others), and a copy of the Report or of that part of the Report, which deals with the subject of workshops, is to be sent to the Secretary of State.

The subject of proper factory and workshop administration is an all-important one in connection with the health and well-being of the workers. The present Act is a great advance, and gives very important powers, requiring, therefore, the serious attention of medical officers, certifying surgeons, and others.

Legal Decisions

AFFECTING THE PUBLIC HEALTH AND THE MEDICAL PROFESSION.

By J. E COONEY, L.R.C.P., D.P.H.

Of the Middle Temple, Central Criminal Court, and of the South-Eastern Circuit, Barrister-at-Law; late Medical Officer of Health of Fulham, London.

ADULTERATION.

DICKINS *v.* RANDERSON,

12 B. (1901) 437; 65 J.P. 262 (Divisional Court).

Standard Strength of Drugs—British Pharmacopœia—Pharmacy Act, 1868, s. 15—*Sale of Food and Drugs Act*, 1875, s. 6.

An information was laid on behalf of the County Council of West Riding against the appellant, who kept the "Taylor's Drug Stores" at Skipton, and who was a duly certified chemist, for having sold to the prejudice of the purchaser a certain drug, *viz.*, two ounces of mercury ointment, which on analysis was found to be deficient in mercury, containing: Mercury, 12·5 per cent; lard and suet, 87·5 per cent. The ointment was supplied in a small wooden box, the end of which was labelled "The Ointment, Mercurial, Poison," the words "The Ointment" being in print and the remainder in writing. Mercurial ointment, according to the British Pharmacopœia, contains 48·5 per cent of mercury. The respondent admitted at the hearing that he asked for "mercury ointment" simply, and did not state that he required the same to be according to the directions of the British Pharmacopœia, and contended that mercury ointment was not a compounded drug within the meaning of the statute. It was contended on behalf of the appellant that proceedings would not lie under s. 6 of the said Act, but ought to have been taken under s. 7, the article in question being a compounded drug. The justices convicted the appellant.

Held (Bruce J. and Phillimore J.), That, although the purchaser did not refer to the Pharmacopœia, he must be taken to have demanded that the ointment should be compounded of the proportions therein prescribed, and that upon a complaint under s. 6 of the Food and Drugs Act, 1875, the vendor was rightly convicted of having sold a drug not being of the quality demanded by the purchaser.

WHITE *v.* BYWATER (1887) 19 Q B.D. followed.

Held, also, That the fact of the ointment being a compounded drug did not make the sale of it as above mentioned any the less an offence within s. 6 *Appeal dismissed.*

SMEATH *v.* TAYLOR,

1 K.B. (1901) 376; 65 J.P. 548 (Divisional Court).

Food and Drugs—Certificate of Analysis, Sufficiency of—Insertion of Weight of Sample—Sale of Food and Drugs Act, 1875, s. 18.

Case stated by Justices of the county of Lincoln.

An information had been preferred under s. 6 of the Sale of Food and Drugs Act, 1875, by the respondent against the appellant, charging him with having unlawfully sold to the prejudice of the purchaser butter which was adulterated with 15 per cent of margarine, and was not of the nature, substance, and quality demanded by the purchaser. Upon the hearing, the certificate of analysis was produced, which declared that the sample contained 15 per cent of margarine and 85 per cent of butter, and contained the observation that no change had taken place in the constitution of the sample that would interfere with the analysis or affect the result as stated. It was objected to on behalf of the appellant, on the ground that the weight of the sample received by the public analyst to be analysed was not stated in the certificate, and that the certificate was therefore not in the form prescribed by s. 18 of the Act. The justices held that the omission in the certificate of the weight of the sample was immaterial, and that the certificate was valid, and convicted and fined the appellant.

Held (Lord Alverstone C. J. and Lawrence J.), That the insertion in the certificate given by a public analyst under the Sale of Food and Drugs Act, 1875, of the weight of the sample analysed, is obligatory only when the weight of the sample is material to the accuracy of the analysis, and its omission does not necessarily invalidate the certificate when the accuracy of the analysis does not in any way depend upon the weight of the sample.

Appeal dismissed.

GOULDER *v.* ROOK; BENT *v.* ORMEROD; LEE *v.* BENT; BARLOW *v.* NOBLETT,

2 K. B. (1901) 290; 65 J.P. 646. (Divisional Court).

Food (and Drugs)—Beer—Liability of Innocent Vendor for Beer contaminated by Admixture of Arsenic—Sufficiency of Certificate of Analyst—Sale of Food and Drugs Act, 1875, ss. 3, 6.

Beer, with which a certain quantity of arsenic, *viz.*, arsenious acid to the extent of not less than one-eighth of a grain per gallon (injurious to health) had been mixed in the process of manufacture accidentally and in ignorance, was sold by a retailer without knowledge or reasonable grounds for suspicion of the presence of the arsenic in the beer.

Held (Lord Alverstone C. J., Lawrence and Phillimore J. J.), That there was evidence that the beer was not of the nature, substance and quality of the article demanded by the purchaser, and that the retailer could be convicted under s. 6 of the Sale of Food and Drugs Act, 1875. But the certificates of public analysts stating in one case that the sample of beer "contains arsenic," and in the other case that it "contains a serious quantity of arsenic," were held to be insufficient. *Judgment accordingly.*

ELLIOTT *v.* PILCHER,

2 K.B. (1901) 817; 65 J.P. 743 (Divisional Court).

Milk Prosecution — Defence — Written Warranty — Application of Warranty to Future Deliveries of Milk — Evidence — Sale of Food and Drugs Act, 1875, s. 25.

An information had been laid charging the respondent under s. 9 of the 1875 Act, that he did unlawfully, with intent that the same should be sold in its altered state without notice, abstract from some milk a part of such article so as to affect injuriously its quality, substance, or nature. The sample of milk taken showed a deficiency of fat or cream. The respondent had given notice that he intended to rely on s. 25 of the Act, on a written warranty from the firm of dairymen from which he had purchased the milk, the warranty being as follows: "We hereby warrant that each and every supply of milk sent by us to you shall be new milk, unadulterated, and with all its cream." The justices found as a fact that the milk sold by the respondent to the appellant was milk supplied to the respondent under the above-mentioned contract and warranty, and that the respondent had proved to their satisfaction the matters required by s. 25 of the Sale of Food and Drugs Act, 1875, and accordingly discharged him from the prosecution.

The points raised by the appellant were: First, that the warranty formed no part of the contract; secondly, that there was nothing to show on the face of it that the warranty applied to the particular sale of milk; and, thirdly, that there must be a specific warranty with each delivery of milk.

Held (Bigham J. and Ridley J.), That it was sufficient to show that respondent had a contract for the daily supply of milk, and that a specific written warranty for each delivery was not necessary, nor need there be evidence in writing to connect the milk in question with the warranty on which he relies.

Laidlaw v. Wilson (1894) 1 Q.B.D. 74 followed.

Harris v. May (1883) 12 Q.B.D. 97, and *Robertson v. Harris* (1900) 2 Q.B. 117 not followed. *Appeal dismissed.*

PEARKS, GUNSTON & TEE, LIMITED, *v.* KNIGHT.

THE SAME *v.* VAN TROMP,

2 K.B. (1901) 825; 65 J.P. 822 (Divisional Court).

Butter — Process of mixing Milk with Butter — Increased Percentage of Water — Sale of Food and Drugs Act, 1875, s. 6.

The appellants were grocers and provision merchants, in the Staffordshire Potteries, and sold the respondents half-pounds of butter for analysis. The public analyst certified that the butter contained 22·53 per cent of water, and this was at least 6 per cent too much water. It was proved that water is a natural constituent of butter, and is always present in butter to a considerable, though varying, extent. Butter is made from milk or cream, or both. It is not unusual to blend two or three different kinds of butter. Milk contains about 88 per cent and cream about 50 per cent of water. There is no statutory standard as to the proportion of water butter may contain, the Board of Agriculture having made no regulations as to butter under s. 4 of the Act of 1899. The 6 per cent excess of water which the appellants' butter was certified to contain was not the result of the manufacture of butter from milk or cream, but was caused by the addition to butter already manufactured of extraneous milk, which was incorporated by some process with the butter, for the purpose of increasing its weight by means of the extra water thereby introduced. The magistrate was of opinion that the additional 6 per cent. of water was excessive, and was caused by the addition of milk in the manner stated, and he held that the process of adding the milk to the butter, being for the purpose of the addition of water, constituted an offence under s. 6 of the 1875 Act.

Held (Wills J. and Kennedy J.), That they had committed the offence specified in s. 6 of the Sale of Food and Drugs Act, 1875, namely, selling to the prejudice of the purchaser an article of food not of the nature, substance, and quality of the article demanded by him. *Appeal dismissed.*

ARTISANS' DWELLINGS.

WEATHERITT *v.* CANTLAY,

2 K.B. (1901) 285; 65 J.P. 644 (Divisional Court).

House let in Lodgings or occupied by Members of more than one Family—Byelaws—Public Health (London) Act, 1891, s. 94.

A summons was issued on a complaint by the Vestry of St. George the Martyr, Southwark, under certain bye-laws made by the Vestry in pursuance of s. 94 of the Public Health (London) Act, 1891, in regard to houses let in lodgings or occupied by members of more than one family, charging that the respondent, as the landlord of a certain block of artisans' dwellings in Gun Street, Southwark, had failed, after being served with a notice, to furnish the Sanitary Authority with a true statement of particulars in regard to such house. The block, the subject of the summons, is entered directly by a single entrance; there is a front door, but no means of fastening the same beyond a Norfolk latch. The entrance passage branches into two passages about the centre of the building, and there are two double-roomed tenements and one single-roomed tenement on each outer side of the passage, and one single-roomed tenement

between the two single branch passages. This is the arrangement on each of the four floors. Each of the tenements is let to a separate family. At the back end of each passage on each of the floors there is a water-closet, sink, water-tap, and dust-shoot opening. On the south side this convenience serves for the use in common of four tenements, and on the north side for three tenements. The staircase and passages are used in common. A caretaker lives on the premises. The names of the occupiers of the various tenements in the building appear on the rate-book, and each of the tenements is rated separately, but the landlord compounds for the rates.

Held (Lord Alverstone C. J., Lawrence and Phillimore J. J.), A building which is divided into separate tenements which are let as artisans' dwellings is not a "house" within the meaning of s. 94 of the Public Health (London) Act, 1891, so as to enable the Sanitary Authority to make bye-laws for its regulation. *Appeal dismissed.*

DRAINS.

DE LASSALLE *v.* GUILDFORD,
2 K.B. (1901) 215 (Court of Appeal).

Parol Warranty that Drains are in Order—Agreement—Collateral Agreement.

Application for a new trial, or that judgment should be entered for the plaintiff in an action tried by Bruce J. with a jury.

The action was brought to recover damages for an alleged breach of warranty as to the condition of the drains of a house, and for fraudulent misrepresentation and breach of covenant. The plaintiff and the defendant entered into negotiations for the lease of a house by the latter to the former. The terms were arranged, and the counter part of a lease was signed by the plaintiff, but the plaintiff refused to hand over the counterpart unless he received an assurance that the drains were in good order. The defendant verbally represented that the drains were in good order, and the counterpart was handed to him. The lease contained no reference to drains. It turned out the drains were not in good order, and the plaintiff and his family suffered in health, and the plaintiff was put to expense in altering the sanitary arrangements. The jury found that there was a representation by the defendant that the drains were in good order, they negatived fraudulent misrepresentation and breach of covenant, and they assessed the damage sustained by the plaintiff as £75. The learned judge, after argument, on further consideration gave judgment for the defendant, being doubtful whether the jury had found that there was something which would amount to a warranty, and being of opinion that, even if there was a warranty, it would not be collateral to the lease so as to entitle the plaintiff to maintain an action. The plaintiff appealed.

Held (A. L. Smith, M.R., Collins L. J. and Romer L. J.), That the representation made by the defendant as to the drains being in good order was a warranty which was collateral to the lease, and for breach of which an action was maintainable. *Appeal allowed.*

MATTHEWS *v.* STRACHAN,

2 K.B. (1901) 540; 65 J.P. 789 (Divisional Court).

Effectual Drainage of New House—Separate Drains for Sewage and Surface Water—Discretion of Urban Council—Public Health Act, 1875, s. 25.

Case stated by justices. An information against the appellant by the Urban District Council of Harrow-on-the-Hill for that he had erected a house in Lyon Road, without constructing such covered drains thereto as on the report of the surveyor of the Council appeared to the Council necessary for the effectual drainage of the house, contrary to s. 25 of the Public Health Act, 1875.

Two sewers had been laid by the Council in Lyon Road, both within 100 feet of the site of the house in question. One of these sewers, called the surface-water sewer, the Council desired and intended to be used for the reception and conveyance of surface water only; the other, called the sewage sewer, the Council desired and intended to be used for the reception and conveyance of sewage only. Bye-laws relating (*inter alia*) to the drainage of buildings, made under s. 157 of the Public Health Act, 1875, are in force in the district of the Council. These bye-laws do not require that separate drains for surface water and sewage respectively shall be laid for any building. Recently regulations were issued by the Council, purporting to be under s. 21 of the Act of 1875, prohibiting surface water from being permitted to enter the sewers of the Council. Before erecting the house Matthews deposited plans thereof in accordance with the bye-laws, showing a single drain for both surface water and sewage. This the Council approved of subject to the appellant having a separate drain for the surface water. At the hearing the justices held that they had no power to question the order of the Urban District Council, and convicted the appellant.

Held (Ridley J. and Bigham J.), That in deciding what is "necessary for the effectual drainage" of a new house, under s. 25 of the Public Health Act, 1875, an Urban Council must consider only what is necessary for the particular house in question; they cannot take in question what is desirable having regard to the disposal of the sewage of the district generally, and upon that ground require separate drains for sewage and for surface water. *Appeal allowed.*

HEDLEY *v.* WEBB,

2 Ch. (1901) 126; 65 J.P. 425 (Cozens-Hardy J.).

Sewer Building—Semi-detached Houses—Effect of Laying Sewer in another Person's Land—Public Health Act, 1875, ss. 4, 13.

The plaintiff and the defendant were the owners respectively of two plots of land on the Longland Park estate, Sidcup, adjoining the Park Hill Road, in which there was a public sewer vested in the local authority. Each of them was also the owner of one-half of the road so far as it ran with the plot.

The defendant first acquired his plot and built thereon a pair of semi-detached houses. The drains from each of the houses joined at a point on the defendant's land, and from that point the sewage was carried by one culvert into the public sewer. Part of the culvert was carried through the portion of the road which then belonged to the plaintiff's predecessor in title, and was constructed under circumstances which made its construction a trespass. The plaintiff having purchased his plot and the adjoining half of the road, required the defendant to remove the pipes and connection so far as they were in the part of the road opposite his plot, and on his refusal to do so, brought an action against him claiming: (1,) A declaration that the defendant is not entitled to drain his premises through the plaintiff's premises;; (2.) An injunction; (3,) A declaration that such drains and pipes are the property of the plaintiff and that he is entitled to remove the same.

Held: (1.) That the defendant's pair of semi-detached houses constituted "one building only" within the meaning of s. 4 of the Public Health Act, 1875, and that the culvert from the point of junction of the drainage of the two houses was a "drain" and not a "sewer" within the meaning of that section; (2,) That even if the culvert was a sewer, the defendant could not by his wrongful act vest in the local authority the part of it which lay in the plaintiff's land, and that the plaintiff was entitled to have that part removed.

STOKES *v.* HAYDON,

65 J.P. 756 (Divisional Court).

Construction of Drains—Notice of Order—Non-compliance with Order of Vestry—Metropolis Management Act, 1855, s. 76.

A complaint was laid by the appellant against the respondent under s. 64 of the Metropolis Management Act, 1855, for that the respondent did neglect to comply with the order of the Vestry of Rotherhithe to construct man-holes and other work to a new drain at 22, Elephant Lane, Rotherhithe. In May, 1900, the drains of the premises were found to be so defective as to cause a nuisance, and the owner was served with a notice to abate the nuisance, and to relay the drain in accordance with the Vestry's regulations. In June the respondent, who is a builder, applied for permission to lay a glazed stone waste pipe as per plan. This was agreed to by the surveyor subject to the condition of man-holes and ventilating pipes being constructed. The surveyor, in due course, reported this to the Sanitary Committee, which was finally approved of by the Vestry. The respondent completed the drainage works without constructing the man-holes. Beyond the surveyor's letter to the respondent, no order of the Vestry was served on the owner, who raised this objection at the hearing, and contended that s. 76 of the Act provided for this. The magistrate held that no order and notification as required by the Act had been made and notified to the respondent, and dismissed the complaint.

Held (Lord Alverstone C. J. and Lawrence J., That there was a sufficient order of the Vestry within s. 76 of the Metropolis Management Act, 1855.

Held, on a further case being stated Ridley J. and Bigham J., That though the said order was a good one, it had not been notified to the respondent. *Appeal dismissed.*

[*In this case the validity of the order was not questioned, which seems a pity.*—ED.].

DYING DECLARATIONS.

REX *v.* SMITH.

65 J.P. 426 (Bruce J., Central Criminal Court).

Expectation of immediately impending Death—Evidence—Questions put to Declarant—Answers only taken down.

The prisoner, a registered medical practitioner, was indicted and charged upon the coroner's inquisition with the wilful murder of Mrs. Bromley Smith by performing an illegal operation with intent to procure her miscarriage, and that blood-poisoning had ensued which caused her death. A magistrate and a doctor visited the dying woman for the purpose of taking a statement from her. In reply to a question put to her by one of them, she said, "I am aware that I am seriously ill." The magistrate then put questions to deceased, and the answers only were reduced to writing by the doctor. At the trial objection was taken to the statement as being inadmissible as a dying declaration on two grounds: Firstly, the statement consists only of answers to questions put to her by the magistrate, and so comes within the ruling of Cave J. in *Reg v. Mitchell*, 17 Cox C.C. 503, that "a declaration should be taken down in the exact words which the person who makes it uses, in order that it may be possible from those words to arrive precisely at what the person meant. When a statement is not the *ipsissima verba* of the person making it, but is composed of a mixture of questions and answers, there are several objections open to its reception in evidence. . . . In the first place the questions may be leading questions, and in the condition of a person making a dying declaration there is always very great danger of leading questions being answered without their force and effect being fully comprehended." This statement is therefore inadmissible. Secondly, it is not admissible because the prosecution has not shown that Mrs. Bromley Smith at the time she made the statement, was in the expectation of immediate death. It is not enough for the prosecution to prove that she was in the expectation that she was going to die, but that she was in the expectation of immediately impending death; it had not been shown that she was in that expectation, but the statement she had made, "I am aware that I am seriously ill," was evidence that she was not in the expectation of immediately impending death.

Held: (1,) That the prosecution had not proved that in her own opinion the woman was beyond all hope of recovery, and that therefore the statement was not admissible; (2,) That such a statement—

the magistrate asking the woman questions and the doctor taking down only her answers in writing—was not admissible as a dying declaration.

The judge directed the jury to return a verdict of not guilty of murder. *Verdict: Not guilty.*

The judge directed the jury to return a verdict of not guilty on an indictment charging him with using an instrument or means unknown with intent to procure a miscarriage. *Verdict: Not guilty.*

REX *v.* HOLLOWAY,

65 J.P. 712 (Wills J., Central Criminal Court).

Deposition—Taken at Hospital—Criminal Law Amendment Act, 1867—*Deposition not Signed by the Witness—Admissibility under Indictable Offences Act*, 1848.

The prisoner was the stepfather of the deceased girl, and he and his stepson were quarrelling in a room where the deceased was. The prisoner threw a burning lamp at his stepson, and set fire to the girl, who was taken to Walthamstow Hospital, when she died of the serious burns she received. A deposition of the deceased girl was taken by a magistrate at the hospital. At the time the deposition was taken it was intended that it should be taken in accordance with the provisions of the 1867 Act. The accused was present and had a full opportunity of cross-examining the witness. The deposition was read over to the witness, and she assented to it as correct, but she did not sign it, as her hands had been seriously burnt and were covered with bandages. It would have been harmful to her to take the bandages off, and it was impossible for her to sign or make a mark with them on. The magistrate who took the deposition signed it, and he was one of the magistrates who ultimately committed the accused for trial.

Held, That the deposition had been taken in accordance with the provisions of the Indictable Offences Act, 1848, s. 17, and was admissible, although it had not been signed by the witness.

FACTORIES.

HOARE *v.* RITCHIE & SON,

1 Q.B. (1901) 434 (Divisional Court).

Ventilation—Dust Generated and Inhaled by Workers to Injurious Extent—No Evidence of Actual Injury—Factory and Workshops Act, 1878, s. 36.

By s. 36 of the Factory and Workshops Act, 1878, when in any factory a process is carried on by which dust is "generated and inhaled by the workers to any injurious extent," the factory inspector has power to require a fan or other means of ventilation to be provided. An information was laid by the appellant (who was one of Her Majesty's inspectors of factories) under s. 36 of the Factory and Workshops Act, 1878, as extended by s. 33 of the Factory and Workshops Act, 1895, which alleged that the respondents, being the occupiers of a jute mill at Carpenter's Road, Stratford, in West

Ham, wherein an impurity, to wit dust, was generated and inhaled by the workers to an injurious extent, did fail to provide, use, and maintain a fan or other mechanical means of a proper construction for preventing such inhalation within a reasonable time after due notice had been given by the appellant. At the hearing it was proved that 120 persons were employed in the rooms in question, and that large quantities of dust were generated by the process carried on. The evidence failed to prove that any of the workers had suffered any injury to their health from inhaling the dust generated by the process there carried on. The appellant contended that dust in large quantities in the atmosphere must be injurious to the workers, and that it was not necessary to prove that any of the workers had actually suffered injury to health.

Held (Bruce J. and Phillimore J.), That it was not necessary to prove that any worker had sustained actual injury from inhaling the dust, but that it was sufficient if it was proved that dust was generated and inhaled by the workers to an extent that must in the long run be injurious.

Appeal allowed. Case remitted to the magistrate.

TRACEY *v.* PRETTY & SONS,

12 B. (1901) 444; 65 J.P. 196 (Divisional Court).

Provision of Sanitary Convenience—Failure of Sanitary Authority to take Proceedings on Notice from Factory Inspector—Power of Factory Inspector to make Requirement—Jurisdiction of Justices to enquire into Sufficiency of Sanitary Accommodation—Appeal to Quarter Sessions from Requirement of Factory Inspector—Public Health Act, 1875, s. 38—*Factory and Workshops Act*, 1878, s. 4—*Public Health Acts Amendment Act*, 1890, ss. 7, 22—*Factory and Workshops Act*, 1891, s. 2—*Factory and Workshops Act*, 1895, ss. 3, 35.

By the Factory and Workshops Act, 1891, s. 2, sub.-s. 2, when notice of an act, neglect, or default is given by a factory inspector under s. 4 of the Factory and Workshops Act, 1878, to a sanitary authority, and proceedings are not taken within a reasonable time for punishing or remedying the act, neglect or default, the inspector may take "the like proceedings for punishing or remedying the same as the sanitary authority may have taken." A factory inspector having given notice to the sanitary authority of Ipswich that there was a deficiency of sanitary accommodation in the factory situated at Tower Ramparts, Ipswich, and the Sanitary Authority not having taken within a reasonable time any proceedings for punishing or remedying the same, the inspector gave notice to the factory owner under this sub-section and under s. 22 of the Public Health Acts Amendment Act, 1890, which had been adopted in the district, requiring him to erect certain specified sanitary conveniences, and on his neglect to comply with the notice summoned him before justices in petty sessions.

Held (Lord Alverstone C. J., Grantham, Bruce and Darling J. J.), Phillimore J. dissenting), That the justices had no jurisdiction to enquire into the suitability or sufficiency of the sanitary accommodation existing at the factory, or required by the notices of the inspector.

Semble, That an appeal lies to Quarter Sessions under s. 7 of the Public Health Acts Amendment Act, 1890, from the requirement of the factory inspector in such a case. *Appeal allowed.*

FACTORY AND WORKSHOP ACT, 1901, 1 Edw. 7, Ch. 22.

This Act which comes into force on the 1st January, 1902, repeals similar Acts of 1878 and 1883, and a large portion of the Acts of 1891 and 1895.

Part 1 of the Act deals with the health and safety of the factory employees. The factory must be kept clean, free from effluvia arising from drains, w.c.'s, or other nuisance; must be free from overcrowding; and completely ventilated. The sanitary condition of workshops or work places is specially provided for under s. 2. Overcrowding is to be deemed so if each person has less than 250 cubic feet of space during ordinary hours and less than 400 cubic feet during any period of overtime (s. 3). The Secretary of State has power to act in default of the local authority in carrying out the provisions of the Act (s. 4). The factory inspector has independent powers as to sanitary defects in factory or workshop remediable by the Sanitary Authority (s. 5). The temperature in factories and workshops is to be secured and maintained reasonably, and thermometers are to be provided and kept in working order (s. 6). Sufficient means of ventilation shall be provided and sufficient ventilation maintained (s. 7). The floors, if liable to be wet in consequence of any process carried on, to be effectually drained s. 8). Sufficient and suitable accommodation in the way of sanitary conveniences, regard being had to the number employed, and persons of both sexes, with proper separate accommodation for persons of each sex (s. 9).

The remaining 154 sections of this long Act with its 7 schedules deal with matters which do not intimately concern the health officer.

ISOLATION HOSPITALS.

ISOLATION HOSPITALS ACT, 1901 (1 Edw. 7, Ch. 9.)

This Act provides for the transfer of isolation hospitals provided by existing local authorities, if they should so desire, to the County Councils, such transfer to be effected only with the sanction of the Local Government Board. The County Councils have the power to contribute towards such hospitals whether the hospitals are within the area of the County Council or not. The hospital committee are empowered to make and give effect to agreements for the use of any hospital or part of a hospital or for the reception into any hospital of the sick of their district. The constitution of the hospital committee so far as representatives of the County Council are concerned may now be members of the Council or not.

NEGLIGENCE.

DULIEN *v.* WHITE & SONS,

(2 K.B. (1900) 609) (Divisional Court).

Nervous Shock resulting from Fright—Remoteness of Damage.

Point of law raised by pleadings. The statement of claim showed: That the plaintiff was the wife of A. D. Dulien, who carried on the business of a licensed victualler in Bethnal Green, London. On 20th July, 1900, she was behind the bar of her husband's said public house, she being then pregnant, when the defendants, by their servant, so negligently drove a pair-horse van as to drive it into the said public-house. The plaintiff, in consequence, sustained a severe shock, and was, and is seriously ill, and on September 29, 1900, gave premature birth to a child. In consequence of this shock sustained by the plaintiff the said child was born an idiot. The plaintiff claimed damages.

The statement of defence, after denying the allegations in the statement of claim, proceeded: The defendants submit as a matter of law that the damages sought to be recovered herein are too remote, and that the statement of claim on the face thereof discloses no cause of action.

Held (Kennedy J. and Darling J., Damages which result from a nervous shock occasioned by fright accompanied by any actual impact may be recoverable in an action for negligence if physical injury has been caused to the plaintiff.

Victoria Railway Commissioners v. Coultas (1888), 13 App. cases 222, not followed. *Judgment for plaintiff with costs.*

NUISANCES.

FOULGER *v.* ARDING,

2 K.B. (1901) 151 (Divisional Court).

Order by Sanitary Authority on Lessee to abate Nuisance—Covenant by Lessee to Pay and Discharge "Impositions" charged or imposed in respect of the Premises—Public Health (London) Act, 1891.

Appeal from a decision of the deputy judge of the Wandsworth County Court.

A lease for years of a dwelling-house in Streatham contained a covenant by the lessee to "pay and discharge all taxes, rates, including sewers, main drainage, assessments and impositions whatsoever which now are or at any time hereafter during the continuance of the said term hereby granted shall be taxed, rated, assessed, charged, or imposed upon or in respect of the said premises by authority of Parliament or otherwise howsoever (landlords' property tax and tithe only excepted." There was no repairing covenant in the lease. Notice was given to the plaintiff—the lessor—by the Wandsworth District Board of Works requiring the plaintiff, as owner of the house and premises, to abate a nuisance thereon arising from a foul and offensive privy, defective soil-pipe, etc., by removing the privy and building a water-closet in accordance with the

bye-laws of the London County Council. The plaintiff, after communicating with the defendant—the lessee—who repudiated any liability n the matter, did the work required in the notice, and on the defendant refusing to pay the cost of the work, brought an action to recover it under the covenant in the lease. The deputy judge at the County Court held that the words of the covenant—"impositions . . . imposed in respect of the premises"—included the expense incurred by the plaintiff, and gave judgment accordingly. The defendant appealed.

Held (Lord Alverstone C. J. and Lawrence J.), That this expense was not covered by the words "impositions charged or imposed upon or in respect of the premises" in the covenant, and therefore the lessee was not liable. *Judgment for appellant. Leave to appeal.*

SOUTH LONDON ELECTRIC SUPPLY CO. *v.* PERRIN,

2 K.B. (1901) 186 (Divisional Court).

Black Smoke—Evidence—Public Health (London) Act, 1891, s. 24 (*b*).

By s. 24 (*b*) of the Public Health (London) Act, 1891, "any chimney (not being the chimney of a private dwelling house) sending forth black smoke in such quantity as to be a nuisance" is a nuisance liable to be dealt with summarily under the Act.

Upon the hearing of complaints under this section it was proved that black smoke issued from the appellant's chimney, 180 feet high, several times a day during a series of days for periods varying from a few minutes to upwards of an hour. No witness was called to prove that the black smoke was a nuisance to himself. On behalf of the appellants it was contended that, in the absence of affirmative evidence that a nuisance to some person or property was created by the above-mentioned black smoke, the offences charged were not made out. On the evidence the magistrate came to the conclusion that the black smoke on each of the said days amounted to a nuisance, and he convicted and fined the appellants on each complaint.

Held (Lord Alverstone C. J. and Lawrence J.), That upon these facts the magistrate was justified in finding that the smoke issued in such quantity "as to be a nuisance," although there was no evidence that any particular person or property was injuriously affected thereby. *Appeal dismissed.*

ROBERTSON *v.* KING,

2 K.B. (1901) 265 (Divisional Court).

Dwelling House unfit for Human Habitation—Closing Order—Local Authority—Powers—Housing of the Working Classes Act, 1890, ss. 29, 32.

By s. 32, sub. s. 1 of the Housing of the Working Classes Act, 1890, it is the duty of a local authority to take proceedings against the owner or occupier for the closing of a dwelling house which is

unfit for human habitation; and by sub. s. 2, "any such proceedings may be taken for the express purpose of causing the dwelling house to be closed whether the same be occupied or not." By s. 29, "In this part of the Act, unless the context otherwise requires, the expression "dwelling house" means any inhabited dwelling . . ."

The local authority for the city of Sheffield had applied under s. 32 of the Housing of the Working Classes Act, 1890, for a closing order in respect of three dwelling houses of which the respondent was the owner, on the ground that they were used as dwelling houses and were in a state so injurious to health as to be unfit for human habitation. They were admittedly unfit for human habitation. The houses had been closed by the owner for five and a half years for all purposes of human habitation, and they had not been used for such purposes during that period, nor had the owner any intention of allowing them to be so used in their present condition. The magistrate refused to make a closing order. He was of opinion that, as the premises had been so long closed to human habitation and placed in a position in which a closing order would place them, whatever nuisance proceedings the respondent might be liable to, there was a want of foundation for a closing order.

Held (Lord Alverstone C. J. and Lawrence J.), That the definition of "dwelling house" in s. 29 did not operate to curtail the powers of the local authority under s. 32; that the mere fact of non-occupancy was not in itself an objection to the making of a closing order, and that the magistrate was wrong. *Appeal allowed.*

BROADBENT *v.* SHEPHERD,

2 K.B. (1901) 274; 65 J.P. 70 and 499 (Divisional Court).

Abatement—Owner—Default—Jurisdiction of Justices to make an Order on Person who has ceased to be Owner—Public Health Act, 1875, ss. 4, 94, 95, 96, 98, 104.

The Castleford Urban District Council took proceedings under s. 95 of the Public Health Act, 1875, against the agent of the owner of certain property for the abatement of a nuisance. The justices dismissed the complaint on the ground that the respondent was not the owner of the premises within the meaning of the section, but stated a case for the opinion of the Court.

A Divisional Court, consisting of Lord Alverstone C. J. and Kennedy J., reversed the decision of the justices, and remitted the matter to them with the opinion that an agent was an owner of the premises for the purpose of s. 94 of the Act.

The case was reinstated at the Castleford Petty Sessions, and it was then admitted that the respondent was no longer agent or rent-collector for the premises in question, having resigned his agency since the last hearing, and it was also admitted that the actual owners of the property had recently been served with notice to abate the nuisance, and that they had actually commenced and carried through part of the work. The appellant, however, proved that part of the premises were still in a state dangerous to the lives

of the tenants, and urged the justices to make an order on the respondent ordering him to abate the nuisance complained of. The justices held that they had no power under the circumstances to make such an order on the respondent; and they accordingly dismissed the summons, but stated this case for the opinion of the Court.

Held (Lord Alverstone C J. and Lawrence J.), That the justices had jurisdiction to make an order on the respondent requiring him to abate the nuisance, although he was no longer the agent of the owner of the property. *Case remitted.*

ATTORNEY GENERAL *v.* COLE & SON,

1 Ch. (1901) 205; 65 J.P. 20, 88 (Kekewich J.)

Noxious Trade—Injunction—Reasonable Use of Premises.

This was an action by the Attorney General at the relation of the Wandsworth District Board of Works to restrain a public nuisance. The defendant carried on the trade of a fat-smelter at Southfields, and the nuisance complained of was alleged to arise from the emanation of noxious gases from the defendant's works. The defendant had carried on his business at the same works for thirty years, but the neighbourhood, which was formerly open country, had been built over to a very large extent only within the last six years. The defendant conducted his business in a proper manner, and took precautions to prevent it from being injurious to his neighbours. The evidence established that a public nuisance was created by the defendant.

Held (Kekewich J.), That in an action to restrain a nuisance, the question whether the defendant is acting reasonably from his own point of view is not material, and if he is carrying on business so as to cause a nuisance to his neighbours he is not acting reasonably as regards them, and may be restrained by injunction, although he may be conducting his business in a proper manner.

Reinhardt v. Mentasti (1889), 42 Ch. D. 685, 690, is not consistent with the observations of Lord Selborne in *Ball v. Ray* (1873), L.R. 8, Ch. 467, or with *Bamford v. Turnley* (1860), 3 B. and s. 62.

Injunction granted.

POISONS.

PHARMACEUTICAL SOCIETY *v.* WHITE,

12 B. (1901) 601; 65 J.P. 340 (Court of Appeal).

Sale of Poisons—Order taken by Canvassing Agent—"Seller"—Pharmacy Act, 1868, s. 15.

The defendant, a seedsman and florist at Worcester, acted as agent to receive orders for the Boundary Chemical Company, Limited, of Liverpool, who were the manufacturers of a preparation called "Weed Killer," which contained arsenic. The defendant took at his shop, for transmission to the company, an order for "Weed Killer" and received on account of the company the price of the quantity ordered, for which he gave a receipt on a bill headed

with the name of the company. He subsequently transmitted the order to the company, who sent the "Weed Killer" ordered to the giver of the order direct. The defendant was in the habit of taking and dealing with orders for "Weed Killer" in the manner above described, and he received a commission from the company in respect of orders so transmitted by him and executed by the company. In an action in the County Court against the defendant for a penalty for selling poison in contravention of the Pharmacy Act, 1868, s. 15, the County Court judge gave judgment for the defendant, on the ground that the defendant was not the seller of the "Weed Killer" within the meaning of the section, and he found as a fact that the defendant was in the position merely of a canvasser for the company, with authority to receive money on their account. On appeal against his decision :—

Held (A. L. Smith, M.R., Collins L. J. and Romer L. J.), affirming the judgment of a Divisional Court, that, there being evidence to support the County Court judges' finding of fact, the Court was bound thereby, and that, upon that finding, the defendant did not sell the "Weed Killer" within the meaning of s. 15 of the Pharmacy Act, 1868. *Appeal dismissed.*

SEWERS.

LAMBERT *v.* CORPORATION OF LOWESTOFT,

12 B. (1901) 590 ; 65 J.P. 326 (Lord Alverstone C. J.).

Disrepair—Liability of Local Authority for Accident arising from—Negligence.

An action was brought against the defendants for injuries caused to the plaintiff's horse while being driven along Cambridge Road, Lowestoft, by reason of the crown of the road having given way under the weight of the horse owing to the defective condition of a sewer under the road. The sewer was constructed with due care and of proper materials by private persons. Subsequently the sewer became vested in the defendants as the local Sanitary Authority by virtue of s. 13 of the Public Health Act, 1875 ; and by ss. 15 and 19 the duty of repairing it and keeping it so as not to be a nuisance was imposed upon them. The sewer was made of brickwork built in mortar. It was connected with drains which carried off the surface drainage. The accident was caused by rats having worked away the mortar at the point where one of these drains joined the sewer, and a cavity having been formed under the roadway. At the time of the accident the surface of the road was in good repair, and there was no indication that a subsidence was likely to occur ; the existence of that cavity was not known to and could not by the exercise of reasonable care have been discovered by the defendants.

Held, That a local Sanitary Authority, in whom a sewer under a highway is vested by the Public Health Act, 1875, is not in the absence of negligence liable for an accident caused to a person passing along the highway, by reason of the sewer being got out of repair.

Borough of Bathurst v. Macpherson (1879) 4 App. Cases 256, and dicta in *Municipal Council of Sydney v. Bourke* (1895) A.C. 433 explained. *Judgment for the defendants.*

EASTWOOD BROS. LD. *v.* HONLEY (N.D.) COUNCIL,

1 Ch. (1901) 645 (Court of Appeal).

Prescriptive Right of Drainage—Trade Effluent—Public Health Act, 1875, s. 21—*Rivers Pollution Prevention Act,* 1876, s. 7.

In 1885 the Honley (N.D.) Council connected with one of their sewers a drain which carried the effluent from the plaintiff's manufactory at Thirston Mills, at Honley, near Huddersfield, where they carried on the business of woollen and worsted manufacturers, and this connection remained, and by means of it the effluent discharged into a channel known as Thirston Dyke, which discharged into a drain or sewer known as the May Brook, and so into the river Holme, until in 1899 the local authority constructed a new sewerage system and threatened to cut off the plaintiff's connection. The plaintiffs then commenced this action, claiming an injunction to restrain the defendants from disconnecting the drain in accordance with their threat. Byrne J. granted an injunction. The defendants appealed.

Held (Rigby L. J., Vaughan Williams L. J., and Stirling L. J.), That under s. 21 of the Public Health Act, 1875, the plaintiffs had an absolute right to discharge their effluent into the sewer, and that if that right had been qualified by s. 7 of the Rivers Pollution Prevention Act, 1876, the facilities given by the local authority to the plaintiffs for carrying their effluent into the sewer ought not to be withdrawn, unless either of the provisos to s. 7 applied, namely, unless it could be shewn that the effluent would prejudicially affect the sewers or the disposal of the sewage matter conveyed along them, or would be injurious in a sanitary point of view, or that the sewers of the local authority were only sufficient for the requirements of their district.

Held, therefore, that, none of these things having been shown, the local authority must be restrained from cutting off the connection between the plaintiff's drain and the sewer.

Decision of Byrne J. (1900), 1 Ch. 781, affirmed.

Appeal dismissed.

GRAHAM *v.* WROUGHTON,

2 Ch. (1901) 451 ; 65 J.P. 710 (Court of Appeal).

Surface Drain—Nuisance by Sewage—Drainage of Houses—Notice to Local Authority—Public Health Act, 1875, ss. 4, 21

An application by motion by an owner and occupier against three neighbouring occupiers to restrain a nuisance by sewage. A drain which ran along a highway past the village of Wetheral, in the county of Cumberland, and emptied itself into a disused quarry

at the foot of the plaintiff's garden, had been used for many years to carry surface water, and also slop water from some of the houses adjoining the highway. This drain was originally a highway drain, but was now a sewer vested in the Rural Sanitary Authority under the Public Health Act, 1875. The solid sewage matter from the houses in the village drained into cesspools; but recently one of the householders, purporting to act under s. 21 of the Public Health Act, 1875, without any notice to the local authority, constructed a water-closet and discharged the solid sewage matter therefrom into this drain by means of a communication which he already had with the drain for the purpose of carrying off his slop water, thereby causing an intolerable nuisance to the plaintiff.

The plaintiff moved for an injunction to restrain the defendant from discharging sewage matter through the said drain. The nuisance was not denied, the main question argued being whether the plaintiff was justified in proceeding against the defendant, instead of the local Sanitary Authority.

Held (Byrne J.), and by the Court of Appeal (Rigby L. J. and Collins L. J.), That he ought to be restrained by injunction; by Byrne J. following *Kinson Pottery Co. v. Poole Corporation* (1899), 22 B. 41, on the ground that the permission of the local authority to use the drain for the passage of slop-water did not authorise its user for every kind of sewage matter; by Collins L. J., on the ground that the conditions imposed by the section as to notice and otherwise had not been complied with. *Injunction granted.*

VACCINATION.

LANGRIDGE *v.* HOBBS,

1 Q.B. (1901), 497 (Divisional Court).

Neglect to procure Vaccination—Information—Period at which Offence completed—Limitation of Time—Vaccination Act, 1867, s. 29; 1871, s. 11; 1898, s. 1.

The appellant was convicted on an information laid on July 12, 1900, under the Vaccination Act, 1867, s. 29, charging him that, being the parent having the custody of a child born on December 30, 1898, he did unlawfully neglect to cause the child to be vaccinated within six months after birth, not rendering a reasonable excuse for his neglect.

On May 1, 1899, the public vaccinator visited the appellant's house, pursuant to notice, and offered to vaccinate the child, and vaccination was refused. On July 7, 1899, the vaccination officer served a notice under the Vaccination Order, 1898, on the appellant, requiring him to have the child vaccinated within fourteen days. No certificate of postponement or successful vaccination was received in respect of the child.

The appellant objected that the information was out of time, having been laid more than twelve months after the offence was committed. The justices disallowed the objection on the ground

that the offence was complete, and the time began to run, on July 21, the date of the expiration of the fourteen days' notice served on the appellant by the vaccination order, and were of the opinion that in computing the time in which proceedings should be taken it should not be reckoned from the date of attainment by the child of the age of six months. As the matter of information did not arise until the expiration of the fourteen days, when the notice was disregarded, and therefore the time for taking proceedings would not expire until July 21, 1900, the information being laid on July 12, 1900.

Held (Wills J. and Phillimore J.), That the offence was complete, and the time began to run six months after the birth of the child, and the information was out of time. *Appeal allowed.*

PYM *v.* WILSHER,

2 K.B. (1901) 806; 65 J.P. 755 (Divisional Court).

Proceedings to obtain Vaccination Order—Condition Precedent—Public Vaccinator—Offer to Vaccinate Child—Vaccination Acts, 1867, s. 31; 1898, s. 1, sub.-s. 3.

Section 31 of the Vaccination Act, 1867, enables summary proceedings to be taken against parents who, after notice, neglect to have their children vaccinated. The Vaccination Act, 1898, incorporates the Act of 1867, and provides by s. 1, sub.-s. 3, that, if a child is not vaccinated within four months after its birth, the public vaccinator of the district, after notice, shall visit the home of the child and offer to vaccinate it in the prescribed manner.

A child, Mabel Wilsher, was born on August 18, 1897, and on the date of the information, namely, January, 1901, was within the Belper Union, and not successfully vaccinated. The vaccination officer gave notice to the respondent, the child's father, to have the child vaccinated, which notice was disregarded. At the hearing it was proved that the public vaccinator of the district had not given the notice that he intended to visit the home of the child prescribed by s. 1, sub.-s. 3 of the Vaccination Act, 1898, nor had he visited the home of the child and offered to vaccinate it as required by that sub-section.

The justices were of the opinion that the provisions of s. 1, sub-s. 3 of the 1898 Act applied to children born before the passing of that Act, and that the provisions of the sub-s. were imperative and not optional, and were, therefore, a condition precedent to an application for an order under s. 31 of the 1867 Act. They accordingly dismissed the information and refused to grant a summons.

Held (Ridley J. and Bigham J.), That the compliance by the vaccination officer with the provisions of s. 1, sub-s. 3 of the Act of 1898 was not a condition precedent to the right to take proceedings under s. 31 of the Act of 1867. *Appeal allowed.*

A Review of New Inventions, and Pharmaceutical and Dietetic Articles.

MEDICAL AND SURGICAL APPLIANCES.

Antiseptic Dressings.—Messrs. J. F. Macfarlan & Co. (9 and 11, Moor Lane, E.C., and Edinburgh) put up the dressings in rolls, enclosed in neat circular tins, by which their aseptic nature can always be preserved until the last piece is used. We have examined a specimen of mercury and zinc cyanide gauze, and found that it is excellently prepared and is quite reliable.

Apparatus for Paralysis or Debility of Leg and Hip (*Fig.* 66).—The object of this machine is to restore the leg, when weak or paralysed, to its proper functions by gradually developing muscular power and natural usefulness so far as admissible, thus helping to assist locomotion and maintain the equilibrium of the trunk and upper extremities. The support is constructed with free articulations, coincidal with the joints of the limb, so as to assume any required rational position in resting or walking; it reaches from the sole of the foot to within two inches below the crest of the ilium, and each part is made to lengthen in order to allow for the growth of the patient.

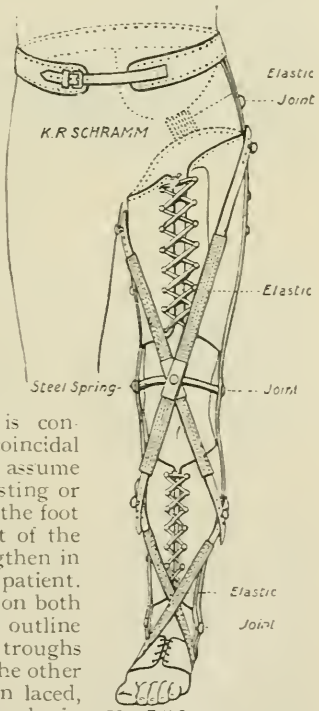

Fig. 66.

The steel bars rise perpendicularly on both sides of the leg, closely following its outline except at the joints. Two leather troughs are fixed to the bars, one above and the other below the knee joint, grasping, when laced, the parts of the leg firmly, so as to obtain the desired effect, *viz.*, control of the whole extremity when under the influence of the elastic straps. These accumulators at the knee pass over a semi-circular removable steel

spring or hoop, which is connected at the inner side of the eccentric knee joint in a revolvable manner, and being somewhat higher than the patella protects the latter from friction, when the accumulators, which are carried over this arc, are brought into action. Elastic force is also employed at the ankle, if either of the varieties of talipes (clubfoot) is coexisting; and at the hip, whenever the trunk is more or less unduly flexed towards the thigh, in which case an elastic passes over a broad padded plate in the region of the sacrum at the back part of the pelvic band. If the elastic straps at the knee are not sufficiently strong to support the weight of the body when walking, a so-called stop joint with ring bolt will be placed at the outer side of the apparatus, which when locked at the will of the wearer makes the knee part absolutely immovable, or when released, will instantly allow the leg to be flexed. All the principal parts are forged out of the best Sheffield shear steel, and carefully tempered. This ingenious mechanism is the work of Mr. K. R. Schramm, 24, Great Castle St., W.

Arsenic (Apparatus for Testing).—The successful application of Gutzeit's test for arsenic to substances containing sulphites or other compounds liable to yield sulphuretted hydrogen, demands extreme care If the substance does not permit of the elimination of the interfering sulphur compounds, or, at least, the reduction in their quantity below a given point, recourse must be had to some other method for finding arsenic.

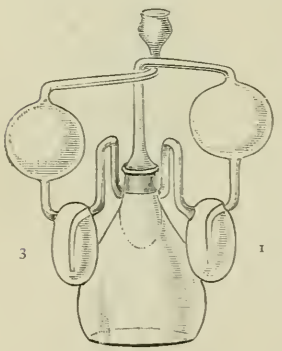

Fig. 67.—Sketch of apparatus. Bulbs 1, 2, and 3, contains the lead solution. Bulb 2 is behind the flask.

Mr. Wm. Kirkby, of Owens College, has devised an apparatus shown in *Fig.* 67. The gas is generated in the flask and traverses five bulbs, of which the three middle ones, 1,2,3, are half filled with 5 per cent solution normal lead acetate; finally it reaches the small thistle head, covered with a filter paper cap bearing a dried drop of mercuric chloride solution (1 in 20), which is stained a yellow or orange colour by arseniuretted hydrogen. The arsenical liquid is mixed with from 5 c.cm. to 10 c.cm. of the purest redistilled hydrochloric acid, and the volume is adjusted to a fixed quantity, say 40 c.cm. in a 150 c.cm. flask. When the bulbs have been charged with the lead acetate solution and the test paper has been fixed in position, a piece of pure rod zinc of definite weight —say 5 to 7 grammes—is introduced, and the apparatus is put on one side for a greater or less time at the discretion of the analyst. The third bulb containing the lead solution should not give signs of having its efficiency exhausted at the expiration of the test; this can be ascertained by comparison with the two preceding bulbs, in which

there will be, if sulphuretted hydrogen is present in the gas, a precipitate of lead sulphide. For the purpose of making comparative estimations of minute quantities of arsenic it is imperative that the apparatus should be used of a standard size. Messrs. Baird and Tatlock, 14, Cross Street, Hatton Garden, E.C., are now making this apparatus of a uniform size and with a flask having a capacity of 150 c.cm.

Aural Syringe.—At the suggestion of Mr. R. Lake, a new aural syringe has been made entirely of metal, so that it can be rendered aseptic The piston is made of hollow steel, and fits accurately to the inner surface of the barrel, while the nozzle is removable to facilitate cleansing. It is made by Mr. J. H. Montague, 101, New Bond Street, London, W (*Fig.* 68.)

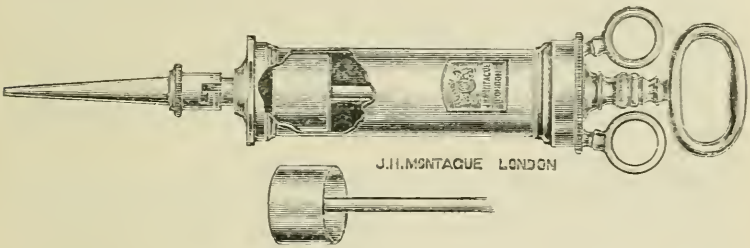

Fig. 68.

Catheter Cupboard.—Messrs. Reynolds & Branson, of Leeds, have contributed to the solution of the important problem, What shall we do with our catheters? They prepare a simple metal cupboard, in which the catheters can be hung up by means of suspenders of special design, and then allowed to drain into a special receptacle contained in the cupboard. The whole plan is convenient and practical. The cupboard measures 12 × 19 × 2, is capable of holding a large number of instruments, and the cost complete is only 10/6.

Cathetol.—Messrs. Reynolds & Branson inform us that when catheters are sterilised in plain water they soon become damaged and unfit for use; if however they are boiled in water containing "Cathetol," which they supply for this purpose, they will retain their polish and become more elastic. Five minutes boiling is sufficient to sterilize very dirty catheters, but they can be boiled for many hours without detriment.

Cork Case.—When buying corks for dispensing purposes, it is just as well to have some arrangement by which the various sizes can be kept separate. Messrs. Sumner & Co., of Liverpool, have introduced a simple case, containing eleven gross of corks of excellent quality, separated into three compartments according to size, so that one can instantly put one's hand on the right sized cork for smaller

or larger dispensing bottles These little arrangements, which save time and worry to the overworked practitioner, deserve appreciation, especially when they do not add to the cost of the material. The box with eleven gross of corks only costs 10/6.

The Domen Straight Fronted Belt Corset.—We have examined the latest improvement of the Domen Belts' Company, 456, Strand, W.C., with very great interest. It is an endeavour to give the fullest support, without that compression over the epigastric and umbilical regions, and interference with the act of respiration, which we associate with tight lacing. It really unites the features of a belt with that of a corset, but it differs from the common combination of the two in the fact that the belt is pulled from before backward, (instead of in the opposite direction), and the pull is upon the lower part of the busk of the corset, so that the pressure on the lower part of the abdomen is backwards and upwards, instead of downwards. The insertion of elastic over the hips and down the sides of the corset, not only aids the fit, but renders tight lacing very difficult. We used one of these corsets for a patient with a large uterine fibroid tumour, and it gave the most perfect support and added greatly to her comfort. We commend them to our readers with great confidence.

Disinfector (Portable).—Mr. Herbert Ritson, of Leeds, has introduced a portable arrangement, for disinfecting one's clothes, gloves, etc., after exposure to infection Formalin is the disinfectant employed, and the whole thing can be carried about without trouble or nuisance. Messrs. Reynolds and Branson, of Leeds, are the manufacturers, and will supply full particulars and illustrations to those interested, who must be very many.

Elastic Stockings.—Mr. J. H. Haywood, of Nottingham, sends us a sample of his patent spiral elastic stocking. This has the advantage of having no seam and no binding, so that it is worn with greater comfort than those of ordinary make. The india rubber thread is run into the fabric in one continuous piece, giving an equal pressure throughout. The stocking is alike on both sides, and is beautifully soft in texture. They can be made with heels and toes if desired, so that the stocking is always kept in place. We also note that they are quite porous. They are made in silk, cashmere, or wool, and in most cases we may say we prefer the latter, for several obvious reasons. Mr. Haywood's process is a distinct improvement in the manufacture of elastic stockings.

Evacuator for Abdominal Cavities, etc. *C. H. Whiteford, M.R.C.S.* The evacuator made at my request by Messrs. Reynolds & Branson, of Leeds, consists of two hollow metal tubes, the size of a No. 12 silver catheter, the tubes being united to each other for the greater part of their length. Both tubes screw into a hollow metal globe which is freely perforated everywhere except at its lowest pole. The longer tube, through which the fluid is sucked by a reversed enema syringe, reaches to within one-eighth inch of the bottom of the glob

The shorter tube only penetrates the globe at the upper part, and connects the interior of the globe with the air, and thus prevents a negative pressure within the globe which might lead to bits of omentum or other soft tissues being sucked through the perforations. The free end of the shorter tube is fitted with a removable plug. By plugging the shorter tube and injecting lotion down the longer, the instrument can be converted into an irrigator.

When in use the bulb is placed in Douglas' pouch or any other hollow containing fluid. The fluid trickles through the perforations to the bottom of the bulb, where it lies in contact with the end of the enema syringe, which is worked by an assistant or a nurse. In a hospital the enema syringe may be replaced by an evacuator, worked by water from the main, similar to that employed for dental work.

The advantages of the evacuator are :—(1,) Rapid removal of extravasated fluids, blood, pus, etc., without the constant sponging which is liable to damage the peritoneum, causing exudation of more fluid and an increased tendency to the formation of adhesions ; (2,) Non-interference with the progress of the operation ; (3,) Easy sterilization by boiling.

Evacuator (Combined Junker and Blood).—This is intended for operations about the mouth and throat, with the object of evacuating the blood and saliva during the operation. Messrs. Reynolds & Branson, of Leeds, are the manufacturers.

Gall Stones (Instruments for Removing).—The annexed engraving shows a pair of instruments designed by Mr. G. L. Cheatle for assisting the removal of gall-stones, always a difficult and tedious operation.

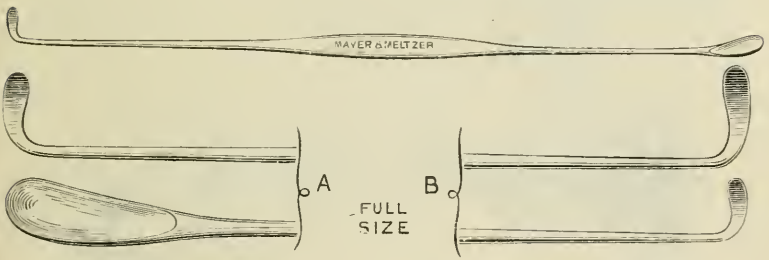

Fig. 69.

They consist of three hooks of various sizes, and a scoop (*Fig.* 69). The hooks are pushed along the bile duct past the stone, then turned, and the stone levered along the duct. The blunt spoon is useful when the calculi are not firmly fixed in the duct. These appliances have been excellently made for the inventor by Messrs Mayer and Meltzer, 71, Great Portland Street, London.

Gauze Packer.—Messrs. Sumner & Co., of Liverpool, have sent us a very simple instrument by which gauze can be packed readily into the uterine cavity in case of hæmorrhage or for any other purpose. The instrument is very simple and effective, and no practitioner who has ever seen one would be content to be without it. They cost 4/-.

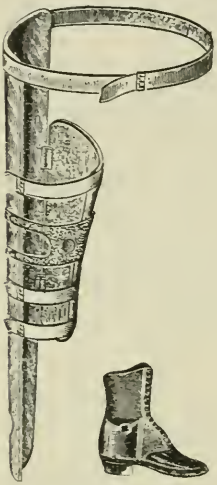

Fig. 70.
Splint for Genu Valgum.

Genu Valgum. *Priestley Leech, M.D.*
Murhead Little draws attention to a very useful splint and boot, made by Alfred Cox, London, for cases of this condition which are too slight for osteotomy. The splint is a wooden one, which is kept in place by webbing straps and bandages, and there is a pocket on the outside of the boot into which the end of the splint fits, and is thus prevented from turning to the front. The patient of course can walk about during the treatment.

Infant's Requisite.—Under this name Dr. Alexander Duke has introduced an appliance on the principle of the india rubber urinal, which is intended in the case of infants to receive both urine and fæces, and save the trouble of frequently changing towelettes. Theoretically the suggestion appears excellent, but why is it we can so seldom persuade elderly patients, suffering from incontinence of urine, to wear such an appliance? This one is made by Messrs. Arnold & Sons, West Smithfield, London, E.C.

Inhalers, Ether (*Fig.* 71).—A modification of Ormsby's Ether Inhaler is the invention of Mr. R. Lane Joynt, F.R.C.S.I., of

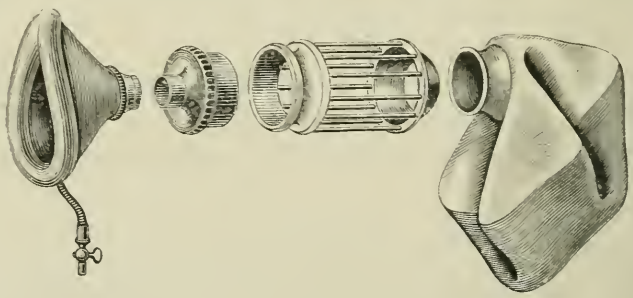

Fig. 71

Dublin. The well-known principle of the original inhaler has been retained, but the whole instrument is rendered capable of ready

sterilization. It is so constructed that each part is accessible to fingers and towel for cleaning. The face-piece is interchangeable with those of the Barth apparatus. The body of the inhaler contains an inverted ledge which prevents surplus ether running back on the patient's face. The cage for holding the sponges is constructed of wire, and is open at both ends so that the unaided fingers can remove the sponges for cleaning without tearing or difficulty. The cage does not collapse and break up, as do those constructed of zinc. The air inlet and ether tube is dispensed with as unnecessary. As will be seen from the figure, each part can be separated by slip-joints. Perfect cleanliness in an inhaler is a *sine qua non*, both for the patient's feelings and for the success of operations in the neighbourhood of the face, neck, and breast No netting is over the rubber bag, which is best preserved by being detached from the cage after use, and cleaning. It is manufactured by Messrs. Smith & Sheppard, St. Stephen's Green, Dublin.

We have also received a new *Face-piece for Ether Inhalers*. This is nickel-plated, with detachable pneumatic rim. It has the advantage over the ordinary kind in being capable of being rendered completely aseptic before use. It is also a more durable and less easily damaged appliance. Messrs. Reynolds and Branson, of Leeds, are the makers.

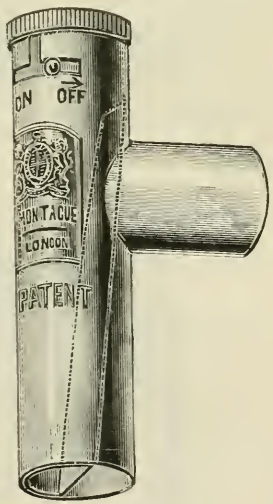

Fig. 72.

An *Open Valveless Stop-cock* for use in the administration of nitrous oxide gas and ether, has been introduced by Dr. George Flux. The chief advantages claimed for the stop-cock are its ready adaptability to various methods of administration, the absence of valves, and the ease with which it can be sterilized. The arrangement will be best understood from *Fig 72*. It is made by Mr. J. H. Montague, 101, New Bond Street, W.

Linen Ether Bag.—Dr. W. MacGregor Young proposes that the ether bag of the Clover Inhaler should be made of linen instead of india rubber. He claims that (*a*,) It prevents cyanosis ; (*b*,) It is clean ; (*c*,) Chloroform can be added without a change. Its disadvantages, pointed out by the author, are that it takes longer to put the patient under the influence of the anæsthetic, and a larger quantity must be used. He considers that the advantages more than counterbalance the disadvantages. We think that our readers will agree with Dr. Young, and that the linen bag, if only on account of its cleanliness, deserve a careful trial. Messrs. Reynolds & Branson, of Leeds, supply

these linen bags ready to be attached to the ordinary bag-mount of the "Clover Inhaler."

The same firm make for Mr. Herbert J. Ritson a simple *Pump for inflating* the ether bag with air prior to administration. This is preferable to inflation by the breath of the surgeon.

Inhalers (Ethyl Chloride).—The use of ethyl chloride as a local anæsthetic is well known, but it is only recently that it has been used as a general anæsthetic by inhalation. Messrs. Sumner & Co., of Liverpool, have already introduced a special form of inhaler for this purpose. It appears to us eminently adapted for the purpose, and should ensure this new use of ethyl chloride having a trial under the best possible conditions. It costs 12/6.

Kidney Operations (Apparatus for securing proper position).—The well-known difficulty of retaining the patient in a proper position during an operation on the kidney through the loin, has induced Mr. C. Carter Braine, F.R.C.S., to design the following apparatus (*Fig. 73*). It consists of a broad iron plate which is intended to be pushed between the mattress and the table, and is

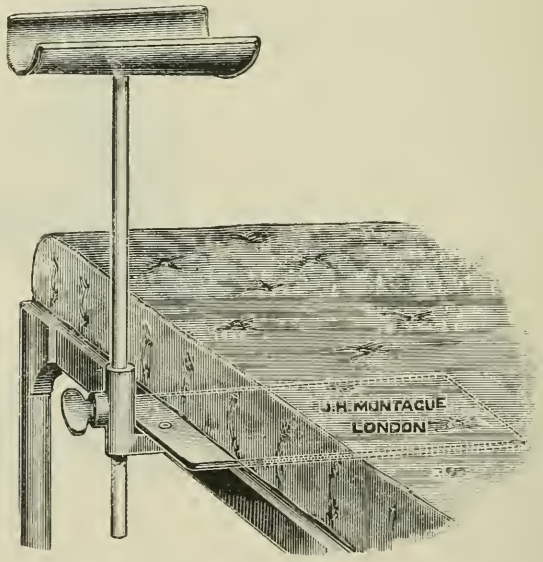

Fig. 73.

kept in position by the weight of the patient's body; to this is attached a sliding rod bearing the arm support, and which can be adjusted to any height required (*Fig. 73*). When the patient is placed in position on his side ready for operation, the instrument is

shifted up and down the table until the upper arm can be placed comfortably in the arm rest ; the patient then remains firmly in the lateral position, and all tendency to roll on to the chest, away from the operator, is prevented by the arm in the arm support, besides which the weight of the arm is taken off the thorax. The contrivance is very simple, but very effectual, and its advantages will be instantly recognized by surgeons who know the difficulties it is intended to meet. Maker, Mr. Montague, of 101, New Bond St., W.

Label Holder.—Practitioners who dispense their own medicines not infrequently experience difficulty in finding the right label. It is quite possible to buy all sorts of boxes and cases which aim at removing this difficulty ; but only a practical dispenser could have suggested the simple expedient of having a tray the width of the labels, and 26½ inches long, with three compartments. The tray is nailed to the edge of the dispensing counter, or rather just below it. It therefore takes up no space on the counter, there is no drawer to go to, but the label is always there just where you want it, ready to be picked up. The label holder is made of Japanese metal, and therefore everlasting. It costs only 2/6, and is just one of those practical common-sense little arrangements which we like to bring before our readers. It is supplied by Messrs. Sumner & Co., of Liverpool.

Lithotomy Straps.—Mr. C. Hamilton Whiteford, of Plymouth, has designed a new form of straps for lithotomy. They are made of

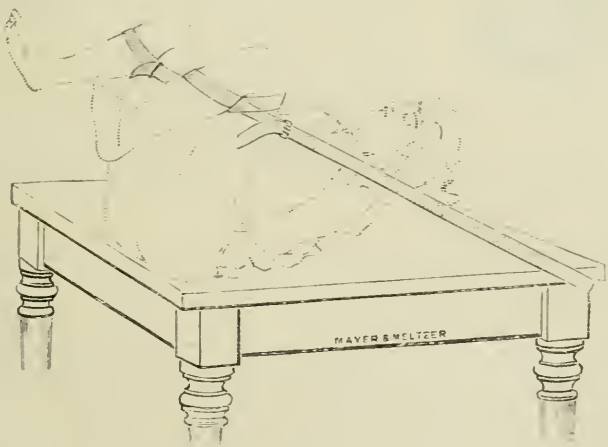

Fig. 74.

stout webbing, and are sufficiently long to fasten round the head of the table instead of round the patient's body. The method of application will be seen from *Fig.* 74. The mechanical advantage appears

to depend upon the width of the table being greater than the patient, when an ordinary table is employed. On an operating couch, a good deal of the advantage would disappear, unless a special cross bar was placed at the head of the couch. Under the conditions of private practice, the method would probably meet all the indications. They are put up in a neat case by Messrs. Mayer & Meltzer, of 71, Great Portland Street, W.

Nebulizer.—A nebulizer differs from an ordinary sprayer in the fact that the spray is produced *within* the bottle, and there by vigorous contact with the sides of there bottle becomes broken up into infinitely small particles, and is then projected on to the surface where it is required in a fine cloud which is almost invisible. In examining any instrument of this kind we always look to see where it is likely to be broken or get out of order. In the type sent us by Messrs. Sumner & Co. (*Fig.* 75) we do not see any weak points; the whole thing appears to be made in a very practical and durable fashion, and we think it will do great service. It costs 7/6 complete.

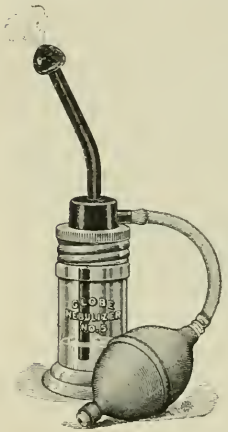

Fig. 75.

Neurotone.—Under this name, the Electro Neurotone Co., Ltd., 26, Old Bond Street, W., have produced a very convenient apparatus for applying the faradic current to the skin. Two metal electrodes are placed side by side, and form a platform upon which the coil rests. By means of a handle the metal electrodes are used over the surface of the skin very much like a flat-iron is used in ironing. The effect of the current is therefore localised, and affects only the nerve terminations in the skin; that is to say, the current itself is not transmitted through the body. In cases where this form of application of the faradic current is desired, this appliance will fill a very useful purpose.

O'Connor Extension Co.'s Appliances.—This company has made a speciality of devising appliances suitable for cripples, which while giving the necessary support, are not recognizable by the observer, and also serve to conceal the deformity. Their method of treating shortened limbs, which gives the name to the company, has been previously noticed by us. We have now received specimens of several very practical appliances from them. One is a simple arrangement by which the drooping tendency of the front of the foot in cases of paralysis is efficiently prevented, and the walking powers improved. Another is a very simple mechanism, by which the ankle is supported in cases of equinus valgus. This is fixed inside the boot, and is very strong, but light in weight. Another is a boot fitted for the support of patients suffering from talipes valgus.

Externally it is like an ordinary walking boot: inside it is fitted to resist the tendency to deformity. It is impossible to describe these appliances in detail, but we may say that they comply with the necessary conditions in a very efficient way, not only without the use of "irons," but also without the addition of the weight which such appliances ordinarily entail. They are made in the only true way, *viz.*, by modelling on the patient who has to wear them, and in all cases we should advise our readers to send the patient to the Company's office, 2, Bloomsbury Street, W.C., when practicable.

Open Air Sanatorium Chart.—Mr. J. N. Barbour has designed a chart intended for noting the many particulars in regard to patients of an open air sanatorium. It is published by Messrs. Reynolds & Branson, of Leeds.

Pagenstecher's Celluloid Thread. *Bertram C. Stevens, B.S.*

The introduction of this thread is a decided advance in operative surgery, especially in abdominal surgery. The fine thread is the ideal suture for peritoneum, as in the operation of gastro enterostomy; it does not slip, is easily threaded, and is easy and supple to stitch with. The tensile strength of the thread in proportion to its calibre is astounding; this strength is if anything increased by the process of sterilisation. There is only a slightly appreciable swelling of the thread after boiling; any water absorbed by it can be dehydrated by preserving the thread in alcohol. Some months of experience with it have not given rise to any anxiety or complication. There is every reason to believe that although the thread is not absorbed, yet it soon gets organised over and buried with an aseptic burial by the neighbouring tissues. The thicker thread is useful for ligating a large blood-vessel or for ligaturing a pedicle, for instance in the operations of vaginal hysterectomy, ovariotomy, and radical cure of hernia. The thread may be boiled many times without undergoing any deterioration. It should entirely supersede silk, being cheaper, more reliable, stronger, and more easily worked with.

The following method of sterilisation is recommended: From the hank obtained cut suitable lengths and wind them on a glass reel. Boil for twenty minutes; take reel out with sterilised forceps and drop into a wide-mouthed bottle containing 5 per cent of phenol in methylated spirit. There the thread can be preserved indefinitely. Supplied by Messrs. Reynolds & Branson, of Leeds.

Plugging Gauze and its Introduction.—The introduction of the method of plugging the maxillary antræ and other cavities, and also sinuses, wounds, etc., with gauze, instead of the use of the drainage tube, constitutes a distinct advance in surgery. By the use of specially made gauze with a selvedge, any risk of leaving fragments of thread in the wound is avoided. We have previously commended the various widths of gauze, impregnated with various antiseptics, sent out on reels by Messrs. Ferris & Co., of Bristol. They have now facilitated the introduction of this gauze by supplying

a series of instruments for its ready introduction. A short instrument will meet the ordinary requirements for wounds and antral abscesses, but they issue two longer ones which render the operation of plugging the uterus or vagina simplicity itself. The larger size, which takes 2½- to 3-inch gauze, only costs 4/-. The smaller one for ½-inch to ½-inch gauze costs 3/-. We think that every practitioner should possess a "caddy" assortment of plugging gauzes and a set of three "introducers." In cases of miscarriage, etc., the large introducer and a roll of 3-inch gauze would be specially valuable, as it enables the vagina to be more firmly packed than by the ordinary method.

Sprayer for Supra-renal Gland Solution.—The value of solution of supra-renal gland as a styptic, and for the treatment of hay fever, are well known, but its use is attended by a practical difficulty from the fact that it decomposes readily on contact with the air. A solution put into an ordinary spray producer, and directed to be used as necessary, would most likely lose its efficacy long before the bulk of this expensive solution was used. Mr. Rogers, of 327, Oxford St., W., with characteristic ingenuity, has solved the problem of enabling the solution to be always ready in a fresh state. He accomplishes this by putting up the solution in tiny glass flasks which he calls hypodermules, which are hermetically sealed, and then inventing a miniature syringe which enables the solution to be used direct from the hypodermule. The arrangement is simply perfect and will be universally approved. The sprayer alone is of great value, as it enables small quantities of such solutions as cocaine, eucaine, etc., to be sprayed, instead of having to use a large quantity as is the case with the ordinary spray producers. The sprayer costs 4/6. The hypodermules of supra-renal gland solution 3/- a dozen. (*Fig.* 76.)

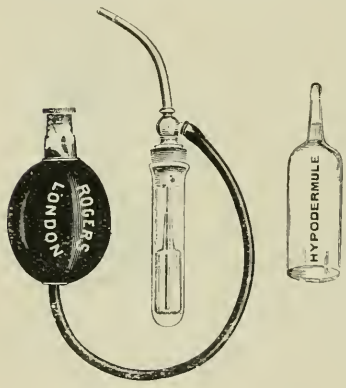

Fig. 76.

Sputum Flask (Barbour's New Pocket).—This pocket flask has been introduced to obviate the natural objection which exists to openly spitting into a bottle-shaped, or other similarly conspicuous receptacle. Lightly stitched (through the little holes) to the inside of a handkerchief, it may be covertly used without attracting more attention than the ordinary use of that article In addition, advantages are claimed in respect to: (1,) Its cheapness; (2,) Shape: wide mouth readily permitting easy cleansing; (3,) Colour of material: readily matching handkerchiefs, bed linen, etc. It may be boiled without injury. From Messrs. Reynolds' & Branson, of Leeds.

Sterilising Forceps.—A very conveniently shaped instrument for removing needles and other articles, large or small, from the steriliser, has been introduced to us by Messrs. Ferris & Co., of Bristol. Some instrument of this kind is necessary, and the shape of this one is such that articles can be easily gripped and prevented from slipping without bringing any great pressure upon them. We think it will meet every requirement.

Stethoscope, Bi-aural.—An entirely new form of stethoscope has been introduced by Messrs. Ferris & Co., of Bristol. It has a chest-piece of a bell shape, so that a certain body of air is enclosed when the chest piece is brought into contact with the body. It is designed with the springs and rigid tubes, which were at one time always associated with the bi-aural stethoscope. These metal tubes are bulbous in shape, with the intention we presume of accentuating the sound. In practical use, we find that when auscultating it gives a very clear definition, but we think all its acoustic properties could be obtained without the use of the spring, which is no longer considered necessary for retaining the ear piece in place, and which causes an amount of pressure that is undesirable. We believe, however, that some practitioners prefer that form of stethoscope, and to meet their requirements it represents the most highly developed instrument of its kind.

Surgical Motor (Portable).—Mr. Ballance and Dr. Milligan, of Manchester, have designed an instrument to meet the want felt by many surgeons for a good form of motor which can be carried about to private operations. It has been constructed by Messrs. Mayer & Meltzer, of Great Portland Street, who have spent much time in perfecting the various details. The 16 volt accumulator is of the sealed type, having a capacity of 18 ampère hours, and it weighs about 34 lbs. The motor is of the type known as the "D" pattern, so called on account of the shape of the field magnet. The armature is a gramme ring, and is attached directly to the shaft which carries the cable, thus acting the part of a fly wheel. It weighs about 15 lbs., and is mounted on a gun-metal turntable which enables it to rotate and follow the movements of the operator. The turntable is mounted on a platform, at each corner of which are sockets, and similar sockets are attached to the steel frame which surrounds the accumulator. Into these sockets steel tubes are fitted, which form a rigid stand at a convenient height. The accumulator acts as a secure base for the motor when in action. The metal cable is directly attached to the central shaft of the motor, and is covered with a flexible metal tube which can be boiled.

The hand piece is attached to the cable by means of a left-handed screw. It is perfectly plain in design, and has no corners for the accumulation of septic matter. The drills, saws, and other tools are held in position by a spring clutch acting in a groove in their shanks, and are easily fixed or removed. The hand piece is in two parts only, the outer portions forming the handle and acting as a bearing

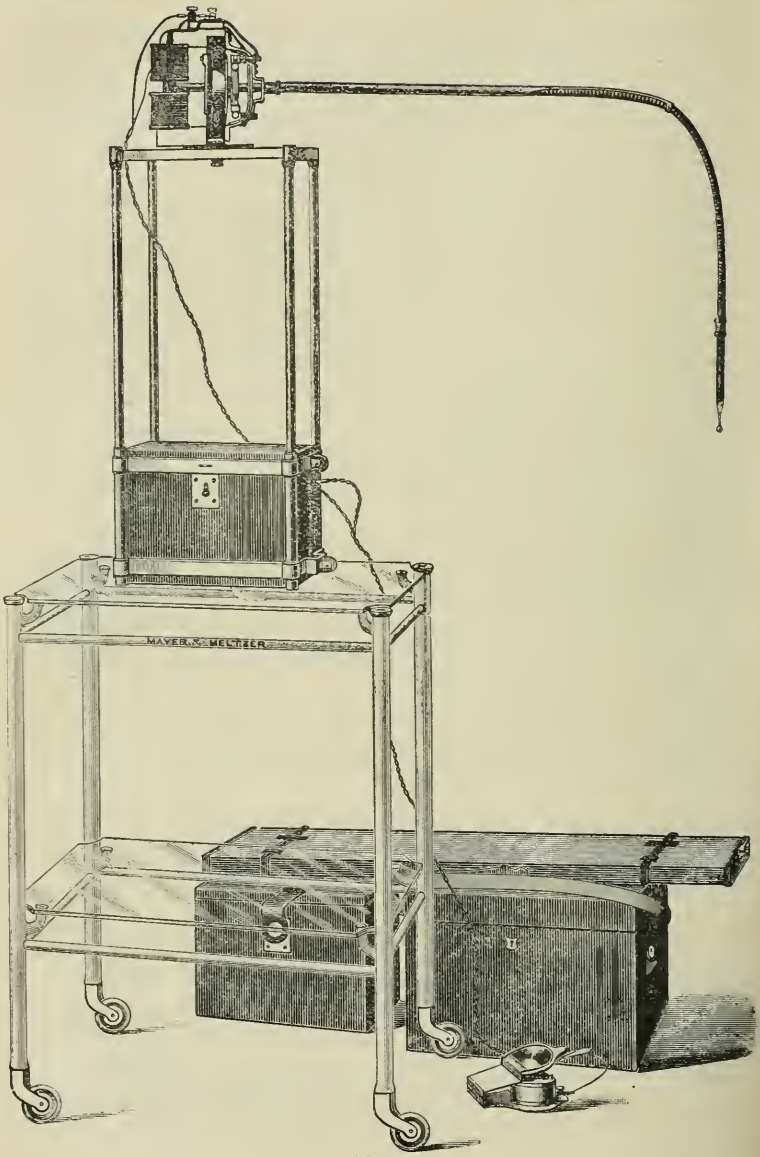

Fig. 77.

for the inner portion, which is the spring clutch already referred to The cable and hand piece is supported by a rigid steel tube terminating in a spring, which relieves the operator almost entirely of their weight, and allows of much greater delicacy of touch than would otherwise be possible. The motor is started and its speed regulated by means of a foot switch.

The apparatus is shown ready for use in *Fig.* 77, and when dismounted fits into three packages shown at foot of same figure. The case on the left is the accumulator. That on the right contains the motor, stand, turntable, switch, and other fittings. The package on the top, like a gun case, carries the legs of stand and flexible arm. The apparatus, with cases, weighs about 70 lbs. For hospital work the motor is wound to suit the voltage of the main current. It is mounted on enamelled steel pedestal fitted with ball-bearing castors. Burrs, drills, a small trephine, and Cryer's drill, can be used with the motor.

Suture Holders.—Mr. E. Canny Ryall, F.R.C.S., has designed a holder which will take and keep separate a dozen prepared sutures

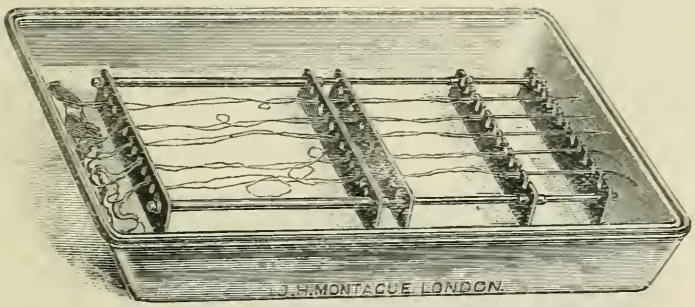

Fig. 78.—New Suture Holder.

and needles, so that they are ready at the moment required during an operation (*Fig.* 78). The idea has been excellently carried out by Mr. J. H. Montague, 101, New Bond Street, London, W.

Syme's Amputation Appliance.—In our notice last year of Mr. Schramm's improved appliance for this condition, (p. 642) the descriptions of the figures were inadvertently transproved, *Fig.* 63 really representing the improved arrangement.

Thorascope.—We have from time to time noticed the various instruments which have been introduced during recent years for auscultation, and we have submitted very many varieties to the test of everyday use. In our opinion the most valuable of all to the practitioner for actually carrying around, is the thorascope which Messrs. Sumner & Co., of Liverpool, introduced to us some time ago

(*Fig.* 79). In principle it resembles the phonendoscope, and is very little inferior to the best of them as regards sound. Its advantages lie in the fact that while it possesses all the good points of the phonendoscope, it is eminently portable. It will lie flat in the breast coat

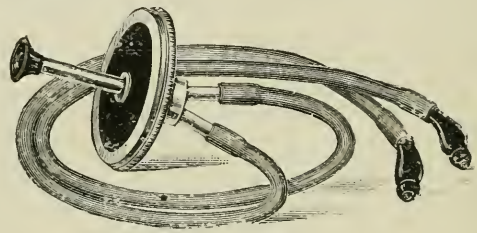

Fig. 79.

pocket, in the little leather bag supplied with it. It is elegant in appearance, and we think we are right in saying that the complete cost is 8/6.

Uterine Instruments (Complete Set).—In a neat flat case measuring $8\frac{1}{2} \times 3$ inches and only $\frac{3}{8}$-inch in thickness, Messrs Sumner & Co. of Liverpool, supply a complete set of uterine instruments (*Fig.* 80). There are blunt and sharp uterine curettes, fitted with arrangements for flushing, uterine probes, caustic holder, tenaculum, and sound. These are fitted in a metal tray so that the whole may be boiled and rendered aseptic. The instruments are well finished, and of full size.

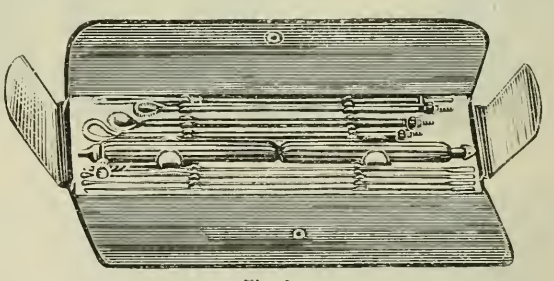

Fig. 80.

It would be impossible to conceive a more portable arrangement of uterine instruments. The compactness is largely due to the fact that two handles are provided into which the instruments are easily fixed. The length of the instruments used for uterine work does not readily lend itself to compactness and ease of transport in an aseptic condition, and this simple tray, which is removable from its outer case, fulfils the indications exactly. The price is also remarkably low, *viz.*, 18/6.

Vaccination Dressings.—At a time when vaccination is being universally performed, we welcome any methods which facilitate the operation or obviate risks attending it. Messrs. Ferris & Co., of Bristol, appear to have given unusual attention to this matter, and send us quite a number of appliances for dressing the arm after the operation. The simplest and we think the most effectual of these is contained in the "Simplex Vaccination Case." This consists of a number of squares of antiseptic lint, and a "spool" of adhesive plaster half an inch in width. The piece of lint is placed over the part operated upon, and secured with a couple of strips of the plaster. The whole is packed in a neat box, with a holder for vaccine lymph, and sold for 1/-. It is just a convenient thing to have at hand or carry with one on the round when vaccinations have to be performed. The squares of lint, which Messrs. Ferris & Co., call "leaves," can be also purchased at 1/9 per box of 100.

Messrs. Ferris & Co. also send us a pad, kept in position by tapes, and also pads of absorbent material which are kept in position by a square of plaster. The celluloid shields which they send us, and which are kept in position by a ring of self-adhesive plaster, are very useful to prevent injury to the arm, and are very inexpensive.

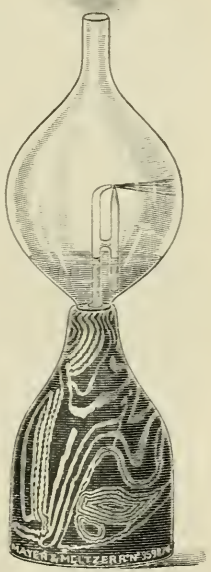

Fig. 81.

Vapourizer, Bulbar.—Messrs. Mayer and Meltzer have introduced an entirely new vapourizer, which may be employed either for oily or aqueous solutions. The construction will be seen from *Fig.* 81. The pedestal upon which the glass bulb rests is made of india-rubber, and when in use this part of the appliance is compressed by the hand. In the apparatus we have tested the outlet for the vapour is at a right angle, which is more convenient than as shown in the illustration. The net wholesale price is 5/6.

PROGRESS OF PHARMACY, DIETETICS, &c.

Adrenalin Chloride.—Messrs. Parke, Davis & Co. sent us a solution of adrenalin chloride, 1 in 1,000. This is obtained from the supra renal gland, and is coming into use as a tonic of the vaso-motor system. It bleaches the mucous membrane of the nose, eye, etc., and has been used with great success in hay fever and conjunctivitis. Use has also been made of its properties as a hæmostatic. It is said to have done good work in the treatment of Addison's disease.

Chloroform and Ether.—We have received samples of specially prepared ether and chloroform intended for anæsthetic purposes, from Messrs. Macfarlan & Co., Moor Lane, E.C. Both are entirely reliable preparations, for which the name of the firm is a warrant. We would again repeat our recommendation that in ordering anæsthetics, even for hospital use, it is better to purchase a number of small bottles than to have it in bulk. In this way the full strength of the anæsthetic is retained.

Colouring Agents for Dispensing.—Messrs. Ferris & Co., of Bristol, have introduced some new colouring agents for dispensing purposes. Liq. flav. dulc. gives a yellow colour without flavour. Liq. aurantii dulc. gives an orange colour and flavour Liq. lemonis dulc. gives a yellow colour with the flavour of lemon. These preparations are not affected by acids or alkalies.

Cuprol is an organic preparation of copper resulting from the combination of the metal (of which it contains about 6 per cent) with nucleinic acid. It is a sister body to nargol (*q.v.*) and is likely to prove efficient both for external and internal uses in which copper is indicated, without producing the irritating effects of the salts of the metal. It should receive careful examination and trial, as it is likely to prove of very great therapeutic importance. Manufacturers, Messrs. Parke, Davis & Co., 111, Queen Victoria Street.

Elixir Salicylic Co.—This is a combination of salicylic acid with cimicifuga, iodide of potassium, and gelsemium, and is being extensively used in the treatment of rheumatism, lumbago, and gout. It is prepared by Messrs. Warner & Co., and is supplied by Messrs. F. Newbery & Sons, Charterhouse Square, E.C

Elixir Terpin Hydrate c. Heroin.—This is practically the same as Elixir terpin, that well known stand-by in bronchitis which Messrs. Sumner & Co. have sold for some years. The addition of heroin should allay irritation of the bronchial tubes, as its action closely resembles that of codeine.

Elixir Guaiacol Co.—This is a good prescription for the irritating cough of consumptives. It contains guaiacol, terpinol, sodii benzoas, and codeine. It is put up as an elixir by Messrs. Sumner & Co.

Extract Celery Co.—This is intended for neurasthenics. It contains celery, coca, kola, viburnum, and nux vomica. It appears to have produced good results, and Messrs. Sumner & Co., of Liverpool, have a large sale for it.

Gelatine-Coated Pills.—The American chemist has long ago decided that for every purpose the gelatine-coated pill is superior to the "pearl" coating, as the latter consists chiefly of French chalk. One of the advantages of the gelatine-coated pill is that there does not exist the same necessity for drying the pill before it is coated, and this adds greatly to the solubility. Our English manufacturers have been in the habit of making gelatine-coated pills by placing

each pill upon a pin and dipping it into gelatine. This leaves a pin-hole, and is also very laborious. Messrs. Sumner & Co., of Liverpool, have adopted the proper course and laid down a plant of the same ingenious machinery as the American firms use, and they can now coat every kind of pill with gelatine. They have forwarded us a number of them for inspection, and we can only say that they are very perfect specimens of the pill-making industry, and a credit to the British manufacturers.

Kelpion.—This contains 5 per cent of iodine. When used as an external preparation it does not stain the skin, nor cause irritation. It is superior to the colourless preparation of iodine because it contains free iodine and is readily absorbed. We have tested it carefully, and find that it is an excellent preparation, and may be used with every confidence and will give satisfaction. It is manufactured by the Kelpion Co , Norgrove Bdngs, 59*a*, Bishopsgate St. (Within), E.C.

Liq. Boracis Co.—This is a solution containing borax, bicarb. soda, carbolic acid, and glycerine. It is especially useful as an antiseptic gargle and mouth wash. It is produced by Messrs. C. J. Hewlett & Son, 40-42, Charlotte Street, London, E.C.

Liquor Carbonis Detergens (Wright's).—This is by no means a new preparation. It has become what we may call a professional word with us. But because it is so much appreciated, because perhaps the profession would be at a loss without it, the authors of the *British Pharmacopœia* have introduced a preparation which may be classed as a distinctly inferior imitation. This is a just cause of grievance with the proprietors, because if we write the usual prescription, liq. carbonis detergens, the dispenser will give the patient the B. P. article, which is obviously not the one upon whose reputation and efficacy we are relying. This is not right ; so we must remember to write the word Wright, or the prescription will go wrong. We do not bless the B. P. authorities for inflicting this unnecessary " rite " upon us.

Mist. Pruni Virg. Conctd.—This is a stimulant and expectorant mixture which owes its efficacy in controlling cough to the wild cherry bark, instead of to morphine or opium. It may be safely given to children. Another preparation suitable for children's cough is composed as follows : vin. ipecac. ℥v, liq. ammon. acet. ℥x, liq. scillæ ℥xx, syrup tolu ℥xv. It is sold under the name of Mist. Pectorales Infant (Hewlett's). Both the above are prepared by Messrs. C. J. Hewlett & Son, 40 42, Charlotte Street, London, E.C.

Nargol.—This is a chemical compound of silver and nucleinic acid. It is readily soluble in water, and possesses a better penetrating power and a more lasting effect than any other silver preparation. Solutions of nargol are not precipitated by coming in contact with albuminous substances. They undergo no change when heated. It contains about 10 per cent of metallic silver, and is consequently superior to any other organic silver compound now on the market.

It has been used with great success in $\frac{1}{4}$ to 1 per cent solution as an injection for gonorrhœa, and possesses in this strength a destructive action on the gonococcus. Its action is not caustic, and therefore it finds many uses in catarrhal inflammatory affections of the eyelids ; good results have been obtained with 5 per cent solutions. It has been also used as a general antiseptic in surgical practice, because it is efficient, odourless, and unirritating. This interesting organic silver compound deserves extensive trial at the hands of the profession. It is prepared by Messrs. Parke, Davis & Co.

Otoids for Ear Medication.—This name has been given to small bougies which contain various medicaments, and which melt easily after having been placed in the ear. They have been received very well by the profession, and they meet a well known want for some easy method of applying medicaments to the external meatus. They have been introduced by Messrs Ferris & Co., of Bristol, who keep a large number of formulæ ready prepared. Amongst these we may mention : (1,) acid boric, gr. i ; (2,) iodoform, gr. $\frac{1}{2}$; (3,) morphine and cocaine, each gr. $\frac{1}{10}$; (4,) zinc sulphate, gr $\frac{1}{2}$; (5,) lead acetate, gr. $\frac{1}{2}$. We commend otoids as a distinct improvement in pharmacy.

Syr. Phytolacca Co.—This valuable alterative is finding an extended use in medical practice as a remedy for chronic diseases, especially when there is a syphilitic or rheumatic taint. It contains phytolacca, stillingia, corydalis formosa, lappa major, potass. iodide, and cascara. It is Messrs. Warner & Co.'s product, and can be obtained from Messrs. Newbery & Sons, Charterhouse Square, E.C.

Vinsip.—This is a new raw meat product introduced by the Vitalia Company. It is manufactured by a new process which gives a palatable preparation. We have therefore given it an extensive trial in both hospital and private practice, and as a result we are inclined to regard it as the most satisfactory meat-juice product at present on the market. Rich as it is in hæmoglobin, we have used it as a medicine as well as a food in cases of anæmia and chlorosis. In the latter class of cases, where the inorganic forms of iron are not assimilated, it constitutes a remedy of the very highest value, which we recommend to our readers with the greatest confidence.

Casoid Bread (for Diabetes).—We have received from Messrs. Callard & Co. samples of their well known "Diabetic foods" We notice a new product which they call "Casoid Bread." It is quite the most palatable dietetic food which we have tasted, and will be very much appreciated by those who are compelled to undergo a starch-free diet. The makers guarantee that it is absolutely free from carbo-hydrates. There are so many diabetic foods on the market which can in no sense be regarded as free from carbo-hydrates, that the guarantee of a reliable firm is almost necessary before they can be ordered for patients with confidence.

MINERAL WATERS.

The Hot Springs of Bath.—The only hot springs in Great Britain must be regarded as a national asset. Their value to a country where rheumatism and gout are the most prevalent disorders cannot be over-estimated. The Romans fully recognised this, and the construction of a palatial bathing establishment at Bath, with good roads leading to it from other parts of the country, was one of their first undertakings. The value of the hot springs of Bath for the cure of rheumatism and gouty disorders has never ceased to be recognised, but some twenty years ago the Corporation of Bath discovered that some foreign spas, less liberally endowed by nature, had made up for their shortcomings in other respects by the addition of hydrotherapeutic appliances which greatly increase the efficacy of treatment.

The Corporation thereupon proceeded on the lines of the naval policy of Great Britain, and determined that their establishment should excel in the number and variety of its appliances and baths any three of the Continental spas. In the luxuriousness of its arrangements the Bath establishment has never been equalled by any foreign spa. The Corporation are justly proud of the way in which they have acquitted their trust for the nation, and have recently published an excellent handbook giving a very full description of the arrangements they possess for every method of bathing, which we understand is to be sent to every practitioner in the United Kingdom, by whom we believe that it will be read, not only with interest, but with profit. It will constitute an appeal for the approval of the whole body of the profession, whose requirements the Corporation have taken great pains to satisfy. Under the circumstances the statement that the book has the approval of "the local council" of a particular medical organization had better have been omitted: the profession will judge the book and the work done by the Corporation on their own merits.

St. Boniface Water.—The natural springs which flow at Salzschlirf, Hesse, Nassau, are rich in lithium. The St. Boniface spring contains about 20 grains to the pint, in the form of the chloride, so that it is some four times stronger than the artificial lithia water ordinarily sold. It has proved so efficacious in the treatment of gout and the uric acid diathesis, that it has been decided to supply it in bottles for home consumption. It is found that the results obtained in this way are equal to those obtained by drinking direct from the spring, which is not always the case with mineral water. From the well attested reports of the cures which have resulted from its use we have decided to give it an extensive trial in hospital practice, and have every hope that it will prove a particularly valuable remedy. Messrs. Ingram and Royle, Ltd., 26, Upper Thames St., E.C., are the British agents. We understand that physicians wishing to make trial of this water in their own families are supplied at a great reduction in price.

Books of the Year.

A List of the Principal Medical Works and New Editions Published during 1901.

AMBULANCE AND NURSING.

Bacteriology and Surgical Technique for Nurses. By Emily M. A. Stoney. Demy 8vo, pp. 190. *Saunders* - - - - - - *Net* 5/-

Convalescent's Diet: How to Provide and Prepare it. By Lucy Ellen Yates. 12mo, pp. 96. *Virtue* - - - - - - - - - - 1/6

Elementary Bandaging and Surgical Dressing. By W. Pye, F.R.C.S., revised by Thos. Carwardine, M.S., F.R.C.S. Ninth Ed. Small 8vo, pp. 222. *J. Wright & Co.*, Bristol - - - - - - - - - 2/-

First Aid to the Injured, and Ambulance Drill. *Temple Cyclopædic Primers*. By H. Drinkwater. 12mo, pp. 110. *Dent* - - *Net* 1/-

First Aid to the Injured and Sick. An Ambulance Handbook. By F. J. Warwick, B.A., M.B. (Cantab.), and A. C. Tunstall, M.D., F.R.C.S. (Ed.) 12mo, pp. 244. *J. Wright & Co.*, Bristol - - - - 2/6

First Aid Diagrams: from the above. Large Sheets, 22 in. by 40 in., for Lectures and Classes. 2/- per sheet. *J. Wright & Co.*, Bristol. Set of 16, with Nickel Head for hanging, 27/6

First Aid to the Injured Emergency Book. For Instantaneous Reference. 8vo. *St. John Ambulance* - - - - - - - *Net* 3/6

Legal Hand-book for the use of Hospital Authorities. By Leonard Syer Bristowe. Cr. 8vo, pp. 164. *Scientific Press* - - - 2/6

Mother, Baby and Nursery. A Manual for Mothers. By Genevieve Tucker. Cr. 8vo, pp. 210. *Unwin* - - - - - - - 1/-

Nursing: General, Medical and Surgical. With Appendix on Sick-room Cookery. By W. J. Hadley, M.D. Crown 8vo. *Churchill* - 3/6

Nursing of Patients suffering from Diseases of the Chest. By Bedford Fenwick. Cr. 8vo, pp. 128. *Nursing Record* - - 5/-

Nursing Profession (the): How and Where to Train. By Sir Hy. Burdett. Cr. 8vo, pp. 397. *Scientific Press* - - - - - - - *Net* 2/-

Obstetric and Gynecologic Nursing. By Edward P. Davis, M.D. 12mo, pp. 400, fully Illustrated. *Saunders* - - - - *Net* 8/-

Practical Nursing of Infants and Children. By Frank Cole Madden. Cr. 8vo, pp. 296. *Cassell* - - - - - - - - - - 3/6

Practical Points in Nursing, for Nurses in Private Practice. By Emily A. M. Stoney. 73 Illustrations and Plates. *Saunders* - - *Net* 7/6

Short Manual for Monthly Nurses. By C. J. Cullingworth, M.D. 5th ed. Fcap 8vo. *Churchill* - - - - - - - - 1/6

Sick and Wounded in South Africa. What I saw and said of them and of the Army Medical System. By Mr. Burdett Coutts. Cr. 8vo, pp. 272. *Cassell* - - - - - - - - - - - 1/6

Syllabus to Lectures to Nurses. By Andrew Davidson. Cr. 8vo, pp. 104. *Scientific Press* - - - - - - - - 1/-

ANATOMY AND PHYSIOLOGY.

Anatomy: Manual of Practical. By Alfred W. Hughes. Edited and completed by Arthur Keith, M.D. Part I. The Upper and Lower Extremities. Illustrated by 38 coloured Plates and 116 Figures in the Text. Roy. 8vo, pp. 294. *Churchill* - - - - - - 10/6

Anatomy in its Relation to Art. By George McClellan, M.D. 4to. Illust. 338 and Photographs, pp. 260. *Saunders* - - - *Net* 42/-

Atlas and Epitome of Special Pathologic Histology. Circulatory Organs, Respiratory Organs and Gastro-Intestinal Tract. By Hermann Durck. Edit. by Ludvig Hektoen. Cr. 8vo, pp. 158. *Saunders Net* 13/-

Atlas of the Anatomy and Physiology of the Child. By D'Arcy Power. Imp. 8vo. *Baillière* - - - - - - - - *Net* 3/-

Commonwealth of Cells. Some Popular Essays on Human Physiology. By H. G. F. Spurrell. Cr. 8vo, pp. 128. *Baillière* - - *Net* 2/6

Comparative Physiology of the Brain and Comparative Psychology. By Jacques Loeb. Illustrated. 8vo, pp. 322. *Murray* - - 6/-

Dissection Outline and Index for Students. By W. A. Campbell. Adapted for use with Morris's Anatomy. 8vo. *Churchill* - 3/-

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Carlow. — *District Asylum*. Res. Med. Supt, Dr. T. P. O'Meara. Access—Carlow, ¼ mile.

Carmarthen.—*Joint Counties Asylum*. Res. Med. Supt., Edwin Goodall, M.D. Access—Carmarthen, 2 miles.

Castlebar (Co. Mayo).—*District Asylum*. Med. Supt., Dr. G. W. Hatchell. Access—Castlebar, 1 m.

Chartham (near Canterbury).—*Kent County Asylum*. Res. Med. Supt., G. C. FitzGerald, M.D. Access—Chartham station, 1 mile.

Cheadle.—*Manchester Royal Lunatic Hospital*. Res. Med. Supt., G. W. Mould, M.R.C.S. Access—Cheadle, 2 miles.

Chester.—*Cheshire County Asylum*. Res. Med. Supt., A. Lawrence, M.D. Station, 1½ miles.

Chichester.—*West Sussex County Asylum*. Res. Med. Supt., Dr. H. A. Kidd Access—Chichester, 1¼ miles.

Church Stretton.—*Stretton House*, Shropshire (for gentlemen). Res. Med. Officer, Horatio Barnett, M.B. Access—Church Stretton station, 1 mile.

The Grove House (for ladies). Res. Prop. Mrs. McLintock. Med. Supt., Horatio Barnett, M.B.

Clonmel.—*District Asylum*. Res. Med. Supt., Dr. W. H. Garner Access—Clonmel, 1 mile.

Colchester.—*Eastern Counties Idiot Asylum*. Res. Supt. and Sec., John J. C. Turner. Access—Colchester.

Cork.—*District Asylum*. Accommodation for 1,600 patients. Res. Med. Supt., Oscar Woods, M.D. Access—Cork, 2 miles.

Cupar (Fifeshire).—*Fife and Kinross District Asylum*. Med Supt., A. R. Turnbull, M.B. Access—Springfield station.

Darlington (Durham). — *Dinsdale Park.* Res. Med. Supt., H. W. Kershaw, M.R.C.S. Access—Darlington, 5 miles; Dinsdale, 1 mile.

Dartford.—*City of London Asylum*, near Dartford. Res. Med. Supt., Dr. E. W. White. Access—S.E. Rly, Dartford, 1½ miles. Private patients received at 21/- per week.

Denbigh (N. Wales). — *North Wales Counties Asylum.* Med. Supt., Dr. Llewelyn F. Cox. Access—Denbigh, 1 mile.

Derby.—*Borough Asylum, Rowditch.* Res. Med. Supt., Dr. Macphail. Access—G.N. station, 1 mile; Mid., 2 miles.

County Asylum, Mickleover. Res. Med. Supt., R. Legge, M.D. Access--Derby (Mid.Rly.) 5 miles, Mickleover (G.N. Rly.) 2 miles.

Devizes. — *Wilts County Asylum.* Res. Med. Supt., J. I. Bowes, M.R.C.S. Acc.—Devizes, 1 mile.

Dorchester.—*Dorset County Asylum.* Med. Supt., P. W. MacDonald, M.D. Acc.—Dorchester, 3 miles. *See also p.* 847.

Downpatrick.—*District Asylum* (for 624 patients). Res. Med. Supt., M. J. Nolan, L.R.C.P.I. & L.M. Access—Downpatrick, 1 mile.

Drumcondra (Co. Dublin).—*Cartfield Retreat.* Med. Prop., Dr. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

Dublin.—*Bloomfield*, Morehampton road. Med. Officer, H. T. Bewley, M.D. Access—Dublin, 1 mile.

Farnham House and Maryville, Finglas (for 56 patients, both sexes). Prop. and Res. Med. Supt., W. R. Dawson, M.D. Access — Cab from Dublin, 3 miles.

Consulting Rooms, 41, Upper Fitz-William Street, Dublin.

Highfield (for ladies), Drumcondra. *Hampstead* (for gentlemen), Glasnevin. Med. Supt., Hy. M. Eustace, B.A., M.D. Access—By rail, Dublin. *See also p.* 842.

House of St. John of God, Stillorgan. Resid. Phys., Dr. P. O'Connell. Access — Stillorgan station, ½ mile Dublin, 5 miles.

Richmond District Asylum. Res. Med. Supt., Dr. C. Norman.

St. Patrick's Hospital. James Street. Res. Med. Supt., Dr. R. R. Leeper.

Stewart Institution, Palmerston. Res. Med. Supt., F. E. Rainsford, M.D. Access—Kingsbridge station, 2½ miles.

Verville, Clontarf, near Dublin. Med. Prop., Dr. Lynch. Vis. Phys., Dr. M. P. Savage. Access—Dublin.

Woodbine Lodge, Rathfarnham, 6 miles (ladies). Prop., Mrs. Bishop. Med. Supt., Dr. A. Croly. Access — Rathfarnham tram, 2 miles.

Dudley (Stafford). — *Ashwood House*, Kingswinford. Props., Drs. Peacock and Pietersen. Res. Med. Supt., Dr. Pietersen. Access—Stourbridge Junct. 3½ miles, Dudley sta., 4 miles; Wolverhampton, 7 miles. *See also p.* 846.

Dumfries.—*Crichton Royal Institution.* Med. Supt, J. Rutherford, M.D. Access—Dumfries, 1 mile.

Dundee. — *Royal Asylum*, Westgreen. Res. Med. Supt., James Rorie, M.D., Access—Dundee, 3 miles; Liff, 1½ miles.

Durham.—*County Asylum*, Winterton. Res. Med. Supt., Dr. W. St. J. Skeen, M.B. Access—Sedgefield station, 3 miles, by 'bus.

Middleton Hall, Middleton St. George, Co. Durham. Res. Licen., Robt. Smith, M.D. Access, Dinsdale station, 1 mile.

Earlswood.—*Training Home for the Weak-minded and Imbecile.* Res. Med. Supt., Dr. Chas. Caldecott. Males 400, females 200. Sec., 36, King William st, E.C. Access—Earlswood stat., Red Hill Junc., 1½ miles.

Edinburgh. — *Mavisbank House*, Polton, Midlothian. Res. Med. Supt., G. R. Wilson, M.D. Access Polton sta., N.B.R., 5 minutes' walk.

Midlothian and Peebles District Asylum. Patients 260. Res. Med. Supt., R. B. Mitchell, M.D. Access—Rosslynlee sta., 1 mile.

Royal Edinburgh Asylum, Morningside. Res. Phys. Supt., T. S. Clouston, M.D. Access—Edinburgh, 1½ miles.

Saughton Hall. Res. Med. Supt. & Prop., Sir J. Batty Tuke, M.D. Access—Princes st. stat. 20 min.

Elgin.—*District Asylum.* Med. Supt., J. W. N. Mackay, M.D., Access—Elgin, ¼ mile.

Ennis. — *District Asylum.* Res. Med. Supt., Dr. F. O'Mara. Access—Ennis station, 1½ miles.

Enniscorthy (Co. Wexford).—*District Lunatic Asylum.* Res. Med. Supt., Thos. Drapes, M.B. Access—Enniscorthy, 1 mile.

Epsom (Surrey).—*Church st.* (for 14 ladies). Res. Med. Supt., Dr. W. Clement Daniel. Access—L. & S.W.R., & L.B.S.C.R., 5 min.

Exeter.—*City Asylum*, Heavitree, Res. Med. Supt., R. L. Rutherford, M.D. Acc.—Exeter, 4 miles

Court Hall, Kenton. Props., The Misses Mules. Vis. Phy. Dr. Lovely. Access—Starcross, 1 mile. *See also p.* 842.

Devon County Asylum, Exminster. Med. Supt., Dr. Arthur N. Davis. Access—Exminster, 1¼ miles; Exeter, 4 miles.

Wonford House (Hospital for the Insane). Res. Med. Supt., P. Maury Deas, M.B., M.S. Lond. Access—Exeter station (Queen st.) 1½ miles; (St. David's), 2 miles. *See also p.* 845.

Fairford (Gloucestershire).—*Retreat.* Res. Med. Prop., A. C. King-Turner. Access—Fairford.

Glasgow.—*District Asylum*, Woodilee. Med. Supt., Robt. Blair, M.D. Access—Lenzie station, 1 mile; Glasgow, 8 miles.

Kirklands Asylum, Bothwell. Res. Med. Supt., James H. Skeen, M.B. Access—Bothwell & Fallside stations, ½ mile; Glasgow, 9 miles.

District Asylum and Hospital for Mental Diseases, Gartloch. Res. Med. Supt., W. A. Parker, M.B.

Govan District Asylum, Hawkhead. Res. Med. Supt., Dr. W. R. Watson. Access—Crookston station.

Lanark County Asylum. Asst. Med. Supt., Dr. N. T. Kerr. Access—Hartwood, 5 minutes.

Royal Asylum, Gartnavel. Res. Phys. Supt., Landell R. Oswald, M.B. Receives private patients only. Prospectus on application.

Smithston Asylum, Greenock. Med. Off., J. Wallace, M.D. Access—Greenock, about 1½ miles.

Gloucester. — *Barnwood House.* Res. Med. Supt., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles. *See also p.* 846.

Gloucester County Asylums, Wotton & Barnwood, Gloucester. Res. Med. Supt., F. Hurst Craddock, M.A. Oxon., M.R.C.S. Access—Gloucester station, 1 mile.

Goudhurst (Kent). — *Tattlebury House* (for 6 males and 2 females). Props., Ernest & Miss Newington. Access—Goudhurst, 1 mile.

Great Yarmouth. — *Royal Naval Hospital.* Dr. S. T. O'Grady, Fleet Surgeon in charge. Access—Great Yarmouth station, ½ mile. For Naval patients only, admitted by Admiralty order.

Guernsey.—*St. Peter Port Asylum.* Med. Supt., E. V. Gibson, M.D.

Haddington.—*District Asylum*, 17 miles from Edinburgh. Med. Supt., J. Bruce-Ronaldson, M.D. Access — Haddington station, 10 minutes.

Harpenden (Herts). — *Harpenden Hall*, 5 miles from St. Alban's (for 13 ladies). Prop., Mrs. Farmar-Bringhurst. Res. Licensee, Miss Henderson. Access—Harpenden station. ¼ mile.

Hatton (near Warwick).—*County Asylum.* Res. Med. Supt., A. Miller, M.B. Access — Hatton sta., 2 miles; Warwick sta., 3 mls.

Hayward's Heath.—*East Sussex County Asylum.* Res. Med. Supt., Edward B. C. Walker, M.D. Access—Hayward's Heath sta., 1½ miles.

Henley-in-Arden (Warwickshire). —*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Henley-in-Arden, G.W.R., ½ mile.

Hereford.—*County and City Asylum.* Res. Med. Supt., C. S. Morrison, L.R.C.P., Ed. Access—Hereford, 3 miles.

Hitchin (Herts), near. — *Three Counties Asylum.* Res. Med. Supt. S. E. de Lisle, L.R.C.P.I. Access —Three Counties station, 1 mile.

Hull.—*City Asylum.* Res. Med. Supt., J. Merson, M.D. Access —Willerby station, 1 mile.

Inverness.—*District Asylum.* Med. Sup., John Keay, M.D. Asst. Med. Off., Dr. F. T. H. Blake. Access—Inverness, 2½ miles.

Ipswich.—*Borough Asylum.* Med. Supt., Dr. E. L. Rowe. Access—Ipswich, 2 miles.

Isle of Man. — *Lunatic Asylum,* Union Mills. Med. Supt., W. Richardson, M.D. Access—Douglas, 3 miles.

Isle of Wight.—*The County Asylum,* Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater station, ¾ mile.

Isleworth (Middlesex). — *Wyke House.* Res. Prop., Dr. F. Murchison. Access — Isleworth, Brentford, Osterley station, 1 mile.

Ivybridge.—*Plymouth Borough Asylum.* Res. Med. Supt., W. H. Bowes, M.D. Access—Wrangaton, G.W.R., 1½ miles; Ivybridge, 3 miles.

Jersey. — *The Grove.* Res. Med. Prop., F. N. Gaudin, M.R.C.S. 2½ miles from St. Heliers, 2 from St. Aubin's.

Jersey Asylum. Med. Supt., Julius Labey, M.R.C.S., &c.

Kilkenny.—*District Asylum.* Res. Med. Sup., G. F. West, L.R.C.P. Access—Kilkenny, ½ mile.

Killarney.—*District Asylum.* Res. Med. Supt., Dr. L. T. Griffin, Asst. Med. Off.,, E. W. Griffin, M.D. Access—Killarney, ½ mile.

Kirkby Lonsdale. — *Greta Bank.*. Res. Licensee, Mrs Taylor. Access—Bentham (M.R.) 2 miles.

Knowle (near Fareham).—*County Asylum.* Med. Supt., T. B. Worthington, M.D.

Lancaster.—*County Asylum.* Res. Med. Supt., David M. Cassidy, M.D., D.Sc. Access—Lancaster station (Mid. and L. & N.W. Rly.)

Leeds (Menston, near). — *West Riding Asylum.* Res. Med. Supt., Dr. McDowall. Access—Menston, 1 mile.

Leek (Stafford).—*County Asylum,* Cheddleton. Med. Supt., W. F. Menzies, M.D. Access — Wall Grange station, 1 mile.

Leicester.—*Borough Asylum.* Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.

Leicestershire and Rutland Asylum. Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Leicester Town, 1 mile.

Letterkenny and Londonderry.—*Donegal District Asylum.* Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access—Letterkenny and Lough Swilley Rly. ½ mile.

Lichfield.—*County Lunatic Asylum,* Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access—Lichfield City, 3½ miles; Trent Valley, 4½ miles; Hammerwich, 1½ mile.

Limerick.—*District Asylum.* Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, ½ mile.

Lincoln.—*County Asylum,* Bracebridge. Med. Supt., Dr. G. Parsons Torney. Access—2½ miles from station.

The Lawn. Res. Med. Supt., Arthur P. Russell, M.B. Access —Lincoln, 1 mile. *See also p.* 845.

Liverpool. — *Shaftesbury House.* Near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D., M.R.C.P., Lond. Access—Formby station, ¼ mile distant. *See also p.* 837.

Tue Brook Villa, 3 miles from Liverpool. Res. Med. Supts., Geo. Duffus, M.B., and Dr. T. A. Cooke. (For 52 males and females). Access—Tue Brook stat. or Green Lane car.

London.—*Bethlem Royal Hospital,* St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E. *See also p.* 843.

Bethnall House, Cambridge Rd., N.E. Res. Med. Supt., J. K. Will, M.D. Access — Bethnal Green station.

Brooke House, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. J. O. Adams. Access — Clapton.

Camberwell House, S.E. Res. Med. Supt., Francis H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., Norman Lavars, M.D., and Robt. Serjeant, M.R.C.S. *See also p.* 844.

Chiswick House, Chiswick. Res Lics., Dr. T. S. Tuke. Access—Chiswick sta., ¾ mile; Turnham Green station, ⅓ mile.

Clarence Lodge, Clapham Park, S.W. Lic., Miss F. Leech. Med. Off., Dr. G. F. Blandford. Access —Clapham Road and Clapham Common (electric), 15 minutes.

Featherstone Hall, Southall. Med. Lic., Miss H. E. Dixon. Med. Supts., Drs. G. F. Blandford and G. B. McDonald. Access—Southall station, 5 minutes.

Fenstanton, Christchurch Road, Streatham Hill. Res. Med. Supt., Dr. J. R. Hill. Access—Tulse Hill, 5 minutes, and Herne Hill, 15 minutes. *See also p.* 845.

Flower House, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.B. Access — C. and D. R. Beckenham Hill, 5 minutes.

Grove Hall, Bow (both sexes), Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow stations, ½ mile.

Halliford House, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S., Access—Sunbury station, 1¼ mile.

Hayes. Wood End House (ladies). Uxbridge, 3 miles, London 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Prop., Mrs. Benbow Kelday. Access—Hayes, 2 miles.

Hendon Grove Asylum (for ladies), Hendon. Med. Lic., F. W. Edridge-Green, M.D., F.R.C.S. Access—By M.R., Hendon stat., ½ mile, or 'Bus from Swiss cottage, St. John's Wood, N.W.

See also p. 837.

Hoxton House, London, N. Res. Med. Supt., Dr. J. F. Woods. Access — Shoreditch station, 2 minutes; Liverpool Street station, 10 minutes.

London County Asylum, Banstead, near Sutton, Surrey. Res. Med. Supt., B. J. Jones, M.D. Access — Belmont sta., ½ mile; Sutton station, 1½ mile.

London County Asylum, Bexley, Kent. Res. Med. Supt., T. E. K. Stansfield, M.B. Access—Bexley station, 1¼ miles.

London County Asylum, Cane Hill, Purley, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access —Coulsdon (S.E.R.), or Stoat's Nest (L.B. & S.C.R.), 10 minutes.

London County Asylum, Claybury, Woodford, Essex. Res. Med. Supt., Robert Jones, M.D. Access—Woodford, 1½ miles

London County Asylum, Colney Hatch, N. Res. Med. Supt., W. J. Seward, M.B. Access — New Southgate, G.N.R.

London County Asylum, Hanwell, W. Res. Med. Supt., R. R Alexander, M.D.

London County Asylum, Horton, near Epsom. Med. Supt., Dr. F. Bryan.

Middlesex County Asylum, Tooting, S. W. Med. Supt., H. G. Hill, M.R.C.S. Access—Wandsworth Common station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles, London, 13 miles. Med. Licensees, Dr. Stilwell, and Dr. R. H. Cole. Access—West Drayton, 2 miles.

Newlands House, Tooting Bec Road, S.W. (for gentlemen). Med. Prop., Dr. H. Sutherland. Access—Balham station, 1½ miles, and tram.

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr. Frank R. King. Access—Finsbury Park station, 1 mile. *See also p.* 847.

Otto House, 47, North End Rd., West Kensington (for ladies). Med. Prop., Dr. H. Sutherland. Access—West Kensington station, 1 mile.

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye station, 10 minutes' walk. *See also p.* 845.

St. Luke's Hospital, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. *See also p.* 843.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access—Barnes station, 8 minutes.

Vine Cottage, Norwood Green, Middlesex. Prop., Mrs. Oliver. Med. Supt., Dr. Windle. Access—Southall station, 1 mile.

West Ham Boro' Asylum, Goodmayes, Ilford. Med. Supt., Dr. D. Hunter.

Londonderry. — *District Asylum* Res. Med. Supt., Dr. Hetherington. Access—Londonderry, 1 mile.

Macclesfield. — *Parkside Asylum.* Res. Med. Supt., T. Steele Sheldon, M.B., Lond. Access — Macclesfield station, 1 mile.

Maidstone.—*Kent County Asylum.* Res. Med. Supt., F. P. Davies, M.D. Access — Maidstone sta., 1½ miles.

West Malling Place (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts). — *Fiddington House.* Prop., Major Reilly. Med. Supt., Dr. J. Selfe Lush. Access — Lavington, 1½ Devizes, 6 miles.

Maryborough (Queen's County). — *District Asylum.* Res. Med. Supt., Dr. J. H. Hatchell. Access—Maryborough, ½ mile.

Melrose, N.B.—*Roxburgh District Asylum.* Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile,

Melton. — *Suffolk County Asylum*, near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, 1¼ mile; Woodbridge station, 2¼ miles.

Middlesboro'.—*County Boro Asylum.* Res. Med. Supt., Dr. G. S. Pope. Access—Middlesboro', 2 miles.

Monaghan (Ireland).—*District Asylum.* Res. Med. Supt., Dr. Edwd. Taylor. Acc.—Monaghan, ¼ mls.

Montrose, N.B.—*Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access—Hillside, ¼ mile; Dubton, 1 mile.

Morpeth. — *Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowall, M.D. Access—Morpeth station, 1 mile, by 'Bus.

Mullingar.—*District Asylum.* Res. Med. Supt., Dr. A. D. Finegan. Access—Mullingar sta., 1 mile.

Nelson (Lanc.). — *Marsden Hall* (both sexes). Res. Prop., Mrs. Bennett. Med. Supt., Dr. A. P. Millar. Access—Nelson or Colne sta., 1½ miles. *See also p.* 844.

Newcastle-on-Tyne. — *City County Asylum*, Gosforth. Res. Med. Supt., James T. Callcott, M.D. Access—Newcastle, 4 mls.

Newton-le-Willows (Lanc.) — *Haydock Lodge Asylum.* Med. Prop., E. H. Beaman, M.R.C.S., Edin. Res. Med. Supt., Dr. C. T. Street. Access—Newton-le-Willows station, 2 miles.

Northampton.—*Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access—Castle station, 2½ miles; Midland stat., 3 miles.

St. Andrew's Hospital. Med. Sup., J. Bayley, M.R.C.S. Access—Northampton station, 1 ml.

Norwich.—*Heigham Hall.* Lics., Mrs. Watson and Mr. A. Mottram. Res. Med. Supt., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe sta., 1½ miles.

See also p. 848.

Norfolk County Asylum, Thorpe. 850 beds. Res. Med. Supt., D. G. Thomson M.D. Access—Whitlingham station, 1 mile.

Norwich City Asylum, Hellesdon, near Norwich. Res. Phys. and Supt., Wm. Harris, M.D. Asst. Med. Off., Dr. A. Sykes. Access—Thorpe, cab 4/-; Victoria station, cab, 3/6; City station, 3/-; Hellesdon sta., 1 mile.

The Bethel Hospital for the Insane. Res. Med. Supt., J. Fielding, M.D. Con. Phys., Sir F. Bateman, M.D. Access—Thorpe sta., 1 mile.

See also p. 840.

Nottingham.—*City Asylum,* Mapperley Hill. Med. Supt, E. Powell, M.R.C.S

Notts County Asylum, Sneinton. Asst. Med. Supt., Dr. H. B. Ellerton. Access—M., G.N. or G.C. stations, 15 minutes.

The Coppice. Res. Med. Supt., W. B. Tate, M.D. Access—Mid. and Great Northern station, 2½ miles

Omagh. — *District Asylum.* Res. Med. Supt., Geo., E. Carre, M.B. Access—Omagh, 1½ miles.

Oxford.—*Oxford County Asylum* Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore station, G.W.R.

Warneford Asylum, Oxford, 1½ miles (for private patients only). Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles.

See also p. 842.

Paisley.—*Parochial East Asylum* Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.

Parochial Asylum, Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

Perth.—*District Asylum,* Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

James Murray's Royal Asylum (for private patients only), Perth. Phy. Supt., A. R. Urquhart, M.D., F.R.C.P. (Ed.). Access—Perth, under 2 miles.

See also p. 847.

Plympton. — *Plympton House,* Plympton, South Devon. Res. Med. Supt., Dr. Alfred Turner. Access—Plympton, 1 mile; Marsh Mills, 2 miles; Plymouth, 5 miles.

See also p. 844.

Portsmouth. — *Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton station, 1½ miles.

Prestwich (near Manchester).—*County Asylum.* Res. Med. Supt., Henry Rooke Ley, M.R.C.S Access—Prestwich, 1 mile.

Rainhill (nr. Liverpool).—*County Asylum.* Res. Med. Supt., J. Wiglesworth, M.D. Access—St. Helen's, 2½ miles; Rainhill, 1 mile.

Rotherham Yorkshire). — *The Grange,* near Rotherham, 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, ¼ mile.

See also p. 847.

Salisbury.—*Fisherton House Asylum* Med. Supt., W. C. Finch, M.D. Acc.—Salisbury Stat., 5 minutes.

See also p. 840.

Laverstock House. Prop., J. Haynes; Med. Supt. Res. Lic., Hy. J. Manning, M.R.C.S.

Shrewsbury.—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., A. Strange, M.D. Access—Shrewsbury station, 2½ miles.

Sleaford.—*Kesteven County Asylum.* Med. Supt., J. A. Ewan, M.D.

Sligo.—*District Asylum.* Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.

Stafford. — *County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.

Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Acc.—Stafford, 1 mile.

Starcross (near Exeter).—*Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.

Stirling.—*District Asylum.* Med. Supt., Dr. George M. Robertson. Access—Larbert, 1½ miles.

St. Alban's (Hill End). *Herts County Asylum.* Med. Supt., A. N. Boycott, M.D.

St. Leonards-on-Sea. — *Ashbrook Hall*, Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. W. H. Davis. Access—Warrior Square Station, 2 miles.

Stone (near Aylesbury).—*Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

Sutton (Surrey).—*Chalk Pit House* (for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.

Tamworth (Staffs.). — *The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Med. Attnds. J. Holmes Joy, M.D., and C. H. Joy, M.D. Access—Tamworth, ¾ mile.

Taunton.—*Somerset & Bath Asylum*, Cotford, near Taunton. Res. Med. Supt., Mr. H. T. S. Aveline. Access—Norton Fitzwarren stat., 2 miles.

Ticehurst (Sussex). — *Asylum.* Props., Drs. H. & A. Newington. Access—Ticehurst road 3 miles, Wadhurst 4 miles.

Tonbridge.—*Redlands.* Res. Med. Supt., W. A. Harmer. Access—Tonbridge junc., S.E.R., 2½ miles.

Virginia Water.—*Holloway Sanatorium*, Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Offrs., W. Tinker, L.R.C.P., T. E. Harper, L.R.C.P., Rosina C. Despard, M.D., and D. L. Lindsay, L.R.C.P. Access — Virginia Water sta., 5 minutes. Seaside Branch, Hove Villa, Dyke Rd., Brighton. Med. Officer, E. N. Edwards, M.R.C.S.

See also p. 848.

Wadsley (near Sheffield).—*South Yorkshire Asylum.* Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 1 mile.

Wakefield.—*West Riding Asylum.* Res. Med. Supt. and Director, W. Bevan Lewis, L.R.C.P., Lon. Access—Kirkgate and Westgate station, 1 mile.

Wallingford (Berks). — *Berkshire Asylum.*—Res. Med. Supt., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.

Warwick.—*Midland Counties Asylum*, Knowle, nr. Birmingham. Sec., A. H. Williams. Med. Off. R. H. Foster, M.R.C.S. Access—Knowle, ½ mile.

Waterford. — *District Asylum.* Res. Med. Supt., J. A. Oakshott, M.D. Access—Waterford and Kilkenny sta., 2 miles.

St. Patrick's Inst., Belmont Pk. Conducted by the Brothers of Charity. Med. Supt., W. R. Morris, M.B. *See also p.* 854.

Wells.—*Somerset and Bath Asylum*, Wells, Som. Res. Med. Supt., C. F. Laing, M.B. Access—Wells, 2 miles; Masbury, 2½ miles.

Whitchurch (Salop).—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., and C. H. Gwynn, M.D. Access—Whitchurch station, 1 mile.

Whitefield (near Manchester.)—*Overdale.* Res. Med. Supt., J. Holmes, M.D. Access Prestwich and Whitefield sta., 1½ miles; Molyneux Brow, ¼ mile.

Whittingham (near Preston).—*County Asylum.* Res. Med. Supt., Dr. Frank Perceval. Access—Grimsargh station, 1¾ miles; Whittingham station, 3 minutes.

Winchelsea (Sussex).—*Periteau House*, near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea stat., 1 mile.

Woking.—*Surrey County Asylum*, Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester 4 miles.

York.—*The Pleasaunce*, Heworth Moor. Prop. and Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles.

The Friends' Retreat. Res. Med. Supt., Bedford Pierce, M.D. Access—York, 1 mile.

North Riding of Yorkshire Asylum. Res. Med. Supt., J. Tregelles Hingston. Access—York, 2 miles.

York Lunatic Asylum, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D. Access—York, 1 mile.

See also p. 838.

TRAINING INSTITUTIONS.

Bath.—*Rock Hall House*, Combe Down, near Bath. A training inst. for backward and imbecile children. Lady Supt., Miss Jane Quinton. Med. Off., J. H. H. Lawrence, M.R.C.S. Clerk, E. N. Fuller, LL.B., Bath.

Bearsted (near Maidstone).—*Bearsted House.* School and Home for Feeble-minded boys. Res. Supt. and Prop., G. T. A'Vard, late Head Master of Earlswood Asylum. Only those received who are mildly affected and who do not require to be certified. Those subject to fits or dangerous are not taken. Excellent testimonials from parents. Access—Bearsted, 5 mins.

See also p. 835.

Chilcompton (nr. Bath).—*Downside Lodge.* Med. Supt., Alex. Waugh, M.D. Access—Chilcompton station, about ¼ mile.

See also p. 834.

Dublin.—*Stewart Institution*, Palmerston, Chapelizod, Co. Dublin. For imbecile children. Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum.* For the Training and Education of Imbecile Children. Matron, Miss Butter. Med. Off., Dr. Greig. Access—Baldovan, 1 mile.

Kingston Hill.—*Winchester House.* For backward and feeble-minded Children. Res. Med. Supt. Dr. Fletcher Beach. Acc.—Norbiton, S.W.R., 15 min.

See p. 849.

Kingston-on-Thames (Surrey).—*Conifers*, for the Education and care of Girls needing special oversight under medical guidance. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station. 8 minutes.

Normansfield. A Training Institution and Home for backward and feeble-minded children and adults of either sex. Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick, 5 minutes.

Trematon. For the Education of Boys unsuited by mental or moral weakness for an ordinary school. Med Supt., Dr. Langdon Down. Access—Hampton Wick station, 5 minutes.

Lancaster.—*The Royal Albert Asylum* (for the feeble-minded of the Northern Counties. 740 patients). Principal and Sec., Jas. Diggens. Res. Med. Officer, Dr. A. R. Douglas. Access — Lancaster, 1 mile.

Brunton House. A Home for special Private Pupils under training at the Royal Albert Asylum.

Larbert (Stirlingshire). — *Scottish National Inst.* (for Education of imbecile Children). Res. Supt., A. A. Skene. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia buildings, Glasgow. Access—Larbert stat., ¾ mile.

London (Upper Norwood, S.E.). —*Grosvenor*, 84, Auckland Road. Supt., Miss Arkell. *See also p.* 834.

St. Mark's Road, W., No. 103. Supt., S. Schöntheil, Ph.D. *See also p.* 834.

Richmond (Surrey). — *Ancaster House*, Richmond Hill. A small and select Educational Establishment for backward and mentally-feeble children (*not* idiots). Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., Met. Dist. & N.L.R., 1 mile. *See also p.* 834.

Southgate (Middlesex). — *Brook House.* For Education & Training of the nervous and backward. Res. Med. Prop., Harry Corner, M.D. *See also p.* 848.

Inebriate Homes.

LICENSED UNDER THE ACTS, 1879-1898.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Chiswick and Spelthouse St. Mary are Roman Catholic Religious Institutions.

MALES ONLY.

Buntingford (Herts).—*Buntingford Retreat* (Patients 35). Res. Med. Licensee, G. M. Smith, M.D. Access — Buntingford (G.E.R.), ¼ mile.

Dinas Mawddwy (Merionethshire). *Plâs-yn-Dinas* (Patients 18). — Res. Med. Supt. and Licensee, Dr. W. F. Walker. Access—Dinas Mawddwy, ½ mile. *See also p.* 851

Folkestone. — *Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles. *See also p.* 853

Hancox (nr. Whatlington, Sussex) Res. Supt., ——.

Kingsland R.S.O. (Herts).—*Street Court.* Supt., B. W. Sanders, Esq.

Rickmansworth (Herts).—*Dalrymple Home* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S. Access — Rickmansworth station, Metropolitan Railway, ½ mile; L. & N.W. Railway, 1 mile. *See also p.* 852

Twickenham.—*High Shot House,* (Patients 12). Res. Med. Supt., A. E. Neale, M.D. Access—St. Margaret's station from Waterloo, 300 yards; Richmond 1½ miles. *See also p.* 850

MALE AND FEMALE.

Amesbury (Wilts). — *Amesbury House* (Patients 3). Res. Supt. and Med. Officer, P. J. Barcroft, M.R.C.P., F.R.C.S. Access—Salisbury, 8 miles; Porton station, 4 miles. *See also p.* 853

Bristol. — *Royal Victoria Homes,* Brentry. (Patients 50). Res. Sup., the Warden. Med. Off., Dr. Ormerod. Access—Clifton Down station, 3½ miles.

Westgate-on-Sea. — *Tower House Retreat* (Patients 20). Prin., Dr. James Cheese. Sec., T. Bridgman Smith. Access—Westgate-on-Sea, 5 mins. *See also p.* 850

FEMALES ONLY.

Chiswick.*—*St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

Cradley Heath (Staffs.) — *Corngreaves Hall* (Patients 32). Lic., Rev. J. H. Richards. Med. Offcr., Dr. Arkwright. Hon. Sec., J. H. Broscomb, 29, Alcester road, Moseley, Birmingham. Access—Cradley and Old Hill Stations, 1 mile

Fallowfield.—*The Grove Retreat,* near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs. A. T. Wilkinson, M.D., J. W. Hamill, M.D., and Dr. Margaret Bell. Access—Fallowfield, 10 minutes. *See also p.* 850

Herne Hill.—*Ellison Lodge*, Half Moon Lane (Patients 33). Res. Supt. Miss Hogg.

King's Lynn (Terrington, St. Clement's). — *Hamond Lodge*. Res. Supt.. ——.

Leicester. — *Melbourne House*. (Patients 10). Prop., Mr. H. M. Riley. Med. Supts., C. J. Bond, F.R.C.S., and R. Sevestre, M.A., M.D, Camb. Station, 2 miles.

See also p. 860.

South Cave, Yorks.—*The Hermitage* (Patients 10). Res. Supt., the Matron. Sec., Mrs. Pentike Sutton-on-Hull.

Spelthouse St. Mary (Bedfont, Middlesex).*—Res. Supt., Sister in charge.

Wandsworth.—*Northlands Retreat*, North St., Old Wandsworth, S.W. (Patients 5). Supt., Mrs. E. A. Blackmore.

HOMES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

Male and Female.

Bristol. — *Royal Victoria Homes*, Brentry. Beds 311, for cases under Sec, I. & II. of the Act. Res. Supt., The Warden. Med. Officer, Dr. Ormerod. Access—Clifton Down, Redland, or Patchway Stations, 3½ miles.

Females Only.

Ashford (Middlesex).—*St. Joseph's Home*. Beds 75, for Roman Catholic cases under Sec. II. of the Act. Res. Supt., The Mother Superior. Med. Off., Dr. Norris F. Cork. Access — Ashford, 1 mile.

Bristol. — *Royal Victoria Homes*, Horfield Home (25 Beds for Cases under Secs. I. & II. of the Act). Access—Ashley Hill, Montpelier, & Redland stations, 10 minutes; Bristol (Temple Meads) 3¼ miles.

Horley (Surrey).—*Farmfield*. (Beds 33.) For London cases, under Sec. II of the Act. Res. Supt., Mrs. Matthias. Med. Off., Dr. C. F. Williamson.

UNLICENSED HOMES.

Females Only *(except Bristol, Norwood, and Stonehaven)*.

Bristol.—*Dunmurry*, Sneyd Park, near Clifton. Res. Med. Prop., Jas. Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access—Bristol or Clifton Down sta., 1¼ mile from the latter.*

Croydon.—*St. Raphael's*, Woodside. Supt., The Matron. Access—Woodside station, Croydon.

Croydon. — *Glendalough*, Morland Road, 71, Lr. Addiscombe Road (Patients 4). J. M. Hobson, M.D Access—East Croydon, 10 mins.

Dunvegan, Skye, N.B.—*Cuchulin House*. Res. Med. Supt., Dr. L. Macdonald. Access—Kyle Akin.

Durham. — 25, Allergate. Hon. Sec., Miss King.

Edinburgh.—*Queensberry Lodge*, Supt., Major Macartney. Med.. Supt., Dr. William Russell. Access—Waverley station, ½ mile.

See also p. 852

Hounslow (Middlesex). — *West Holme*. Supt., Matron in Charge. Med. Supt., Dr. G. A. S. Gordon. Access — Hounslow, ¾ Dist. R ¼ mile.

Huddersfield (Yorks.).—*High Flatts Sanatorium*. Supt., The Matron. Access—Denby Dale, 1½ miles; Penistone sta., 3½ miles.

Leicester.—*Tower House.* Prop,. Mrs. Theobald. Med. Attendant, Dr. Clarke. Access—Leicester stat., 1½ miles. *See also p.* 852

Liverpool.—*Temperance Home*, 318, Upper Parliament Street. Supt., Miss A. J. Wilson. Med. Supt., C. Soloman, M.R.C.S.

London.—*Norwood Sanatorium*, 93, Church Road, Upper Norwood, S.E. Res. Med. Supt., C. A. McBride, M.D. Access—Crystal Palace station. 10 mins.

London. — *Weir Hall*, Edmonton. Access—Silver Street, (G.E.) 1 mile. Palmers Green, (G.N.) 1½ mile. *See also p.* 854

Reigate (Surrey).— *Duxhurst.* Supt., Sister in charge. Med. Supt., A. Walters, M.R.C.S. Access—Reigate, 4 miles

Stonehaven (N.B.) — *Elsick House.* Prop., D. Forbes. Med. Supt., Dr. Leslie. Access—Newton Hill, 1½ miles. *See also p.* 893

Sydenham.—*The Tor.* Hon. Sec., Mrs. Atkinson. Med. Supt., Dr. Gardener.

Torquay. — *Temple Lodge.* Hon. Sec., Mrs. Erskine. Med. Supt., Dr. T Finch.

West Derby (near Liverpool).— *Vergmont Sanatorium.* Supt., Miss Mary M. Hocking. Hon. Med. Offis., Dr. H. Harvey and Dr. C. Thurstan Holland. Access—West Derby, ¼ mile; Tue Brook, ¼ mile; Edge Hill, 3 miles. *See also p.* 853

Hydropathic Establishments of Great Britain.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry, which is *stamped for reply*. This will account for some omissions in the present edition.

Aberdeen. — *Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes. *See also p.* 858.

Baslow. — *Baslow Grand Hotel Hydropathic*, nr. Chatsworth Park. Res. Med. Supt., E. M. Wrench, F.R.C.S. Access—Bakewell station, 4 miles by 'bus.

Bath. — *Lansdown Grove House*, Lansdown, Bath. (Invalids only). Med. Supt., Dr. Percy Wilde. Access—Mid. or G.W. stat., Bath, about 1 mile. *See also p.* 829.

Ben Rhydding. — *Ben Rhydding*, Near Leeds, Bradford, or Harrogate. Phys., Thos. Scott, M.D and Dr. W. R. Bates. Access—Station, a few hundred yards.

Bishops-Teignton (near Teignmouth).—*The South Devon Health Resort.* Prop., C. F. Carpenter. Med. Supt., J. Wood, M.B. Access—Teignmouth 2½ mile.

Blackpool. — *Matlock Hydro and Boarding House*, Station Road. Access—3 minutes' walk from South Shore station.

Bournemouth (Hampshire).— *Bournemouth Hydropathic.* Res. Prop., W. J. Smyth, M.D. Access—East sta. 1½ mile; West sta. ¼ mile. *See also p.* 860.

Bridge of Allan.—*Bridge of Allan Hydropathic Co.* Mngr, H. B. Higgins. Access—Station, ½ mile.

Bristol.—*The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Grn. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

Burgess Hill (Sussex).—*Wynnstay Hydrotherapeutic Sanatorium.* Prop. Mr. R. Haynel. Med. Supt., Chas. J. Whitby, M.D., Cantb. (resident). Access—Brighton, 9 miles; Burgess Hill, near.

Hydrotherapy, Sun and Air Baths, Arc-light and Incandescent Baths, Vibrotherapy (Helberg's Apparatus), Electric Baths, latest design (continuous and sinusoidal), Suspension Treatment of Ataxy, Physical Exercises, Diet, Massage. Non-infectious, Pulmonary, Gastro-intestinal and Nervous (NOT Mental) Diseases are treated.

Bute.—*Kyles of Bute Hydropathic,* Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.

Buxton. — *Buxton Hydropathic,* Man. Director, Mr. H. Lomas. Access—Station, 4 minutes.

Corber Hill Hydro, Clarendon House. Man., Miss L. Adams. Access—Buxton station, 5 mins.

Haddon Hall and Haddon Grove Hydros. Prop., Mr. G. E. Hall.

Clevedon (Somerset). — *Clevedon Hydropathic.* Med. Supt., R. T. Morgan. Access—Clevedon, 1 m.

Clifton (near Bristol).—*Clifton Spa & Hydropathic.* Physician, Bertram M. Rogers, M.D. Access, Clifton Down station, 1 mile; Bristol station, 1½ miles.

See also p. 859.

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney Station, 2½ miles. Muskerry Light Railway from Cork, station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane. — *Dunblane Hydropathic,* Perthshire. Res. Phys. Access—Dunblane station.

See also p. 855.

Edinburgh.—*Hydropathic.* J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres.—*Cluny Hill Hydropathic.* Med. Superintendt. Dr. Mulligan. Access—Forres station, 1 mile; Inverness, 24 miles.

Grange-over-Sands. — *Hazelwood Hydropathic.* Physicians, Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway. Grange-over-Sands, ¼ mile.

Harrogate (Yorkshire).—*Harlow Manor Hydro.* Man. Mr. Fenn, Med. Supt., Dr. Dimmock.

The Cairn Hydropathic. Near Leeds and Bradford. Man., Mrs. Baker. Access—Harrogate, ½ ml.

The Harrogate Hydropathic. Phys., Geo., Tennant, M.B. Access—Harrogate, ½ mile.

Hexham (Northumberland).—*Tynedale Hydropathic.* Prop., F. G. Grant. Med. Supt., Dr. Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilkley (Yorkshire). — *Craiglands Hydropathic.* Props., Dobson, Bros. Res. Med. Supt., Henry Dobson, M.D., C.M.

Ilkley Wells House Hydropathic. Med., Supt. Thos. Scott, M.D. Manager, Mr. Ballardie. Access—Ilkley station, ¼ mile.

The Spa Hydropathic. Near Leeds and Bradford. Med. Supt., Thos. Johnstone, M.D. Access—Ilkley, 3 minutes.

Kilmalcolm (Renfrewshire).—*Hydropathic.* Manageress, Miss G. Thomson. Access—Greenock, 7 miles; 16 miles from Glasgow, S.W.R.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Res. Med. Superintendt., J. Gledhill, M.B. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.* (Woodhall Spa).—Apply to secretary.

Liverpool.—*New Hydro Hotel*, West Kirby. Res. Med. Supt., Dr. P. J. Wilkinson. Access — West Kirby station, 5 miles.

Llandudno.—*Hydropathic and Winter Residence*. Med. Supt., James Craig, M.B. Access—Llandudno Station, 5 minutes.

Malvern.—*The Malvern Hydropathic*. Res. Prop., J. C. Fergusson, M.D. Access—Gt. Malvern station, ½ mile.

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells station, G.W.R., ½ mile

Matlock. — *Matlock House Hydropathic*. Matlock Bank. Med. Supt., W. Moxon, M.D., M.R.C.S. Access—Matlock Bridge (M.R.), ¼ mile. *See also f.* 860.

Smedley's Hydropathic. Matlock Bridge. Phys., W. C. Sharpe, M.D., and a Res. House Phys. Access—Matlock Bridge station, ½ mile; Omnibus. *See also f.* 856.

Melrose.—*Waverley Hydropathic*. Con. Phys., Dr. Wade. Access—Melrose station, 1 mile.

Moffat.—*The Moffat Hydropathic*. Prop., J. Farquharson. Med. Supt., Dr. T. B. White.

Peebles.—*Peebles Hydropathic and Hotel*. Res. Medical Specialist. New Department now complete with Douche and Massage, with the newest Electric Light Therapy, Pure Air and Sun Baths, Kneipp's Meadow, &c.—The Cure Regime of a German Bad with the comfort and luxury of a high-class modern Hotel. Access—Peebles station, ¾ mile. *See also f.* 857.

Rhyl.—*Claremont Hydropathic*. Med. Supt., Dr. R. M. Prichard.

Rothesay.—*Glenburn Hydropathic*. Res. Phys., Dr. Philp.

See also f. 855.

Scarborough.—*Hydropathic*, West Bank. Sec., S. C. Platts. Access—Scarborough (N.E.Ry.), ¼ hour.

Shandon. — *Shandon Hydropathic*. Med. Supt., Dr. Douglas Reid. Access—N.B.R. and Steamer.

Skelmorlie. — *Wemyss Bay Hydropathic*. Med. Sup., Ronald Currie, M.D. Access—Wemyss Bay sta., ½ mile.

Southport (Birkdale Park).—*Smedley Hydropathic*. Med. Supt., J. G. G. Corkhill, M.D. Southport or Birkdale stats. *See also f.* 854.

Kenworthy's Hydropathic (51, Bath Street). Phys., Dr. A. B. Kenworthy. Access—Chapel St., Lord St., or Central stat., ¼ mile.

"Sunnyside" Hydropathic. Prop., J. Boocock. Phys., Dr. F. A. Ernest Barnardo Access—Southport stats., ½ mile.

Tunbridge Wells.—*The Spa*. Phys., Dr. Pardington. Access—Station, about ½ mile.

Completely equipped with Turkish, swimming, vapour, medicated, electric and foreign baths and douches of all kinds. The new electric light radiant heat baths, as in use at the chief Continental spas, have recently been added. Neuheim treatment, massage.

Ulverston and Barrow-in-Furness.—*Conishead Priory Hydropathic*. Access—Ulverston station.

Watford.—*The Hall*, Bushey. Man., Col. Coyne. Med. Supt., Dr. F. Smith. Access—L. & N.W. Ry. 1 mile.

Windermere. — *Windermere Hydropathic*, 9 miles from Kendal. Access—Windermere (L. & N.W. R.) 1 mile. Furness Rly. (Bowness Landing), ¼ mile. Pier on Lake, about 300 yards.

Private Homes for Invalids, & Sanatoria.

Bournemouth. — *Overton Hall Sanatorium*, 6, Poole Road. Res. Med. Supt., C. Guthrie Stein, M.B., Ed.

Victoria Home, Cambridge Rd. Apply the Matron. *See also p.* 831.

Brighton.—*Stavely House*, 13, Lansdowne Place, Hove. Medical and Surgical Home for paying patients. Weir-Mitchell — massage — doctors' references. Access—Brighton station, 1 mile, Hove, ¾ mile.

Bristol.—*Nordrach-on-Mendip Sanatorium*, Blagdon, nr. Bristol. Res. Phys , R. Thurnam, M.D. Asst. Phys., A. Scott Smith, M.A., M.D. Access—Yatton station, 12 miles. *See also p.* 832.

Cheltenham (near).—*Cotswold Sanatorium*. Res. Med. Offic. Sec., 2, Ormond place, Cheltenham. *See also p.* 832.

Evesham (Worcs.) — *Greenhill*. Principal, Mrs. Hoddinott. Access—Mid. and G.W.R. stations, Evesham.

Farnham, Surrey. — *Crooksbury Sanatorium*. Sen. Res. Phys., Dr. Walters. Access—Farnham, 3½ miles.

Whitmead Hill, near Farnham. Res. Phys., J. Hurd-Wood, M.D. *See also p.* 831.

Folkestone.—*Haverstock Temperance Boarding House*, Cheriton Place, Prop., Miss M. Woodward. *See also p.* 854.

Hadlow Down (Buxted, Sussex). —*South Beacon*. Prop., Philip H. Harmer. For the care and treatment of ten gentlemen mentally affected, but who are not ill enough to be certified. Fifteen years' experience. Access—Buxted, 3 miles; Heathfield, 4 miles.

Inveresk (Midlothian).—*Shepherd House*. Props., Misses Spencer. *See also p.* 830.

Isle of Wight.—*Inglewood Sanatorium*, St. Lawrence. *See also p.* 832.

Jedburgh.—*Abbey Green*. Res. Prop., Wm. Blair, M.D. Access—N.B.R., Jedburgh. *See also p.* 860.

London.—*Clapton Surgical and Medical Home*, 10 Southwold Road, Upper Clapton. Apply Lady Supt.

Netley House, 15, Henrietta St., Cavendish Square, W. Apply Sister-in-charge. *See also p.* 831.

Nursing Home, 29, Upper Montagu Street, W. Prop., Mrs. Bounsall. Access—Baker Street station (Metropolitan), 5 minutes.

Private Medical and Surgical Home for open-air combined with inhaling treatment of chest diseases, 23 & 25, Clapton Common. Res. Med. Supt., Dr. Hy. J. Buck.

St. Thomas's Home, St. Thomas's Hospital, Albert Embankment, S.E. Apply The Steward, St. Thomas's Hospital, S.E. *See also p.* 829.

Plymouth. — *Woodside House*, 4, Woodside. Lady Supt., Miss L. Beckwith. Access—Mutley station—five minutes' drive.

Shotley Bridge (Co. Durham).—*Bellevue Sanatorium*. Res. Phys., Dr. E. W. Diver. *See also p.* 831.

Stanmore, Middlesex.—*Mary Wardell Convalescent Home for Scarlet Fever*. Med. Off., J. D. Thomas, M.B. Hon. Sec., Miss M. Wardell. Access — Stanmore. (L. & N.W.R.), 2 miles. *See also p.* 829.

Torquay. — *Coombehurst Medical Home*, Newton Road, Torre.

Warrenpoint (Co. Down).—*Rostrevor Sanatorium*. Apply Res. Phys. *See also p.* 831.

Wells (Somerset). — *Hill Grove*, over Wells. Res. Phys., J. M. Barbour, M.B.

Nursing Institutions and Associations.

The information given here is necessarily brief: but further particulars may be added, in small type, at the rate of 2/- per dozen words.

LONDON.

Auxiliary Nurses' Society of the Royal British Nurses' Assoc., 10, Orchard Street, W.

Baker Street Association of Trained Nurses (Regd.), 15, Baker Street, W. Supt., Miss Masters.

Baker Street Trained Nurses' Institute, 9, Upper Baker Street, N.W., close to Station. Lady Supt., Miss M. A. Hooper.

Telegrams: "Helpfulness, London." Telephone: 258, Padd.

Belgravia Nursing Home, 39 and 41, Royal Avenue, Chelsea, S.W. Principals—Mrs. Walter Pye and Mrs. Richard Crawley.

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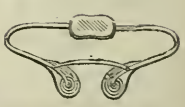

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30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birthday.	Table III. With Profits.		Table IV. Without Profits.		* New Table with Deferred Profits.		Age next Birthday.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 19 9	£2 11 1	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 14 3	3 1 7	30

* In case of death before the Endowment Age the sum insured only will be payable.

SPECIAL Attention is called to the Liberal Options which are now obtainable under any of the **Endowment Tables** of the Company, on the attainment of the Endowment Age. These are:—

1.—Payment of the full Sum Insured in Cash, with Bonuses.

2.—The Insurance to be continued without further payment of premium for the original amount of the Policy. The Bonuses, and the balance of the sum insured after providing for this Paid-up Policy, will be paid in cash.

3.—A Paid-up Policy FOR AN INCREASED AMOUNT, payable at death.
In cases 2 and 3 proof of good health will be required.

4.—A **Pension** to be drawn for the remainder of life, and in addition, a Paid-up Policy, without further payment of premium, for the original sum insured.

5.—A **Pension** for the remainder of life.

6.—A **Pension** to wife or child.

7.—A **Deferred Pension** to commence at the death of the life insured, and be payable during the life of the widow, or of a child.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

Offices at BIRMINGHAM, BRISTOL, CARDIFF, DUBLIN, DUNDEE, EDINBURGH, GLASGOW, HULL, LEEDS, LIVERPOOL, MANCHESTER, and NEWCASTLE.

APPLICATIONS FOR AGENCIES INVITED.

INDEX TO LIFE ASSURANCE OFFICES.

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1901.

TITLE, &c., OF OFFICE.	A	B	C	D	E
					£
Abstainers and General, Life and Accident, Carrs Lane, Birmingham. *Sec.*, R. A. Craig, A.I.A. P	1883	40 11	55 10	82/3	185,000
Alliance, Fire and Life, Bartholomew Lane, E.C. *Gen. Man.*, Robert Lewis .. .. P	1824	48/9	64 5	90/9	*3,361,114
Atlas, Fire & Life, 92, Cheapside, E.C. *Act.*, Robert Cross. *Sub. Man.*, A. W. Yeo. *Gen. Man.*, Saml. J. Pipkin. *Further particulars see page* 776 P	1808	49 3	63/7	88/8	1,642,440
British Empire, Mutual Life, 4 & 5, King William Street, E.C. *Gen. Man.*, G. H. Ryan .. M	1847	47/2	63/9	92/3	3,000,000
British Equitable, Life, Queen St. Place, E.C. *Man.*, J. W. Fairey. *Further particulars see page* 777 P	1854	49/-	66/-	94/3	1,775,155
British Workman's and General, Life and Endowments, Broad Street Corner, Birmingham. *Chairman*, F.T. Jefferson, J.P. *Sec.*, S. J. Port, F.I.S. *Further particulars see page* 778 P	1866	46/2	62/1	89/6	567,602
Caledonian, Fire and Life, 19, George Street, Edinburgh. *Man.*, D. Deuchar. London Office, 82, King William Street, E.C. .. .. P	1805	48/9	64/6	88/6	1,856,916
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Gen. Man.*, William S. Nicol. London Office, 12, King William St., E.C. *Lon. Man.*, J. D. Milne P	1838	49 6	64 6	89 10	2,482,175
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act. & Man.*, F. B. Wyatt. *Sec.*, W. N. Neale. M	1829	46/4	62 2	87 4	4,217,388
Clerical, Medical and General, Life, 15, St. James' Square, and Mansion House Buildings. *Act.*, W. J. H. Whittall .. .. .. P	1824	48 7	66/9	96/3	3,833 914
Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, Edward W. Browne .. .. M	1873	47/4	63 2	89 9	2,385,266
Commercial Union, Fire, Life and Marine, 24, 25, and 26, Cornhill, E.C. *Act.*, T. E. Young, B.A. *Assist. Actuary* A. D. L. Turnbull .. P	1861	49 5	64 2	87 8	2,310,924
Co-operative, Life, Personal Accident, Fire & Fidelity, Long Millgate, Manchester. *Sec.*, James Odgers. *Further particulars see page* 779 .. P	1867	45 8	61 5	88/4	27,886
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. .. .. P	1807	50 8	65 5	91 4	2,409,130
Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. M	1823	44 4	59 6	85 5	4,137,823
Edinburgh, Life and Annuities, 22, George Street, Edinburgh. *Man.*, A. Hewat, F.F.A., F.I.A. *Sec.*, T. M. Gardiner. London Office, 11, King William Street, E.C. *Sec.*, Frank Griffith P	1823	47 7	63/2	89/-	3,565,675
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man*, Albert G. Scott .. .. .. P	1839	49 6	65/2	90 11	2,312,648
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.*, H. W. Manly, F.I.A. M	1762	53 5	67 11	90/7	*4,681,088
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, A. F. Burridge, F.I.A. .. .. P	1844	48 10	64/6	90 9	3,560,261
Friends' Provident, Life, Annuities, &c., Bradford, Yorkshire. *Act.* and *Sec.*, John Bell Tennant. M	1832	45 9	58 1	79/3	2,809,972
General Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page* 778 .. .. .. P	1837	49 10	65 4	92 8	1,778,887

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40 *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

Title, &c., of Office.	A	B	C	D	E
					£
Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott P	1848	49/-	65/8	94/3	7,513,945
Guardian, Fire and Life, 11, Lombard St., E.C., and 21, Fleet Street. *Sec.*, T. G. C. Browne.. P	1821	48/10	64/6	89/3	2,951,733
Hand-in-Hand, Fire, Life and Annuities, 26, New Bridge St., E.C. *Sec.*, H. H. Ray .. M	1696	54/8	71/3	98/-	2,908,995
Imperial. Life, 1, Old Broad Street, and 22, Pall Mall. *Gen. Man.* and *Act.*, J. Chisholm, F.I.A. *Sub. Man.* and *Joint Act.*, Fredk. Bell, F.I.A. P	1820	46/11	62/1	87/5	2,440,939
Lancashire, Life, Fire & Employers' Liability, Exchange St., Manchester. *Gen. Man.* Digby Johnson, London Office, 14, King William St., E.C. *Sec.*, John P. Read .. .. P	1852	48/6	63/6	90/6	*1,090,168
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, A. B. Adlard .. .. P	1823	49/4	64/10	91/-	3,948,439
Law Union & Crown, Life, Fire, Accident & Annuities, 126 Chancery Lane. *Gen. Man.*, A. Mackay P	1825	48/4	64/-	89/10	*4,158,519
Legal and General Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E Colquhoun ... .. P	1836	50/9	65/11	90/9	3,410,000
Life Association of Scotland, 82, Prince's Street, Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop .. .. P	1838	50/-	65/4	93/4	*4,996,676
Liverpool and London and Globe, Fire, Life and Annuities, 1 Dale St., Liverpool. *Gen. Man. & Sec.*, John M. Dove. London Office, 7, Cornhill, E.C. *Act. & Rest. Sec.*, A. Hendriks, F.I.A. P	1836	49/3	65/6	91/3	5,472,078
London and Lancashire, Life, 66 & 67, Cornhill, E.C. *Gen. Man. & Act.*, W. P. Clirehugh. *Sec.*, G. W. Mannering .. .. P	1862	46/10	62/4	86/10	1.507,741
London Assurance Corporation, Fire, Life and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, Geo. King .. P	1720	49/6	64/11	91/5	2,187,480
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill P	1881	48/11	64/7	92/-	322,908
London Life Association, Lim., 81, King William St., E.C. *Act.* and *Sec.*, C. D. Higham, F.I.A. M	1806	60/4	78/10	108/4	*4,560,570
Marine and General Mutual, Life and Marine, 14, Leadenhall St., E.C. *Act.* and *Sec.*, S. Day, F.I.A. .. .. M	1852	48/10	65/11	91/11	*995,538
Metropolitan Life, 13, Moorgate St., E.C. *Sec.*, B. Woods .. .. M	1835	49/9	66/4	92/-	2,028,924
National Assurance of Ireland, Fire, Life, and Annuities, 3, College Green, Dublin. London Office, 47, Cornhill, E.C. .. .. P	1822	48/7	64/3	91/7	*360,762
National Mutual Life, 39, King Street, Cheapside, *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Joint Secs.*, H. G. Rowsell and H. J. Lockwood. *Asst. Act.*, A. Levine, M.A., F.I.A. .. .. M	1830	48/4	63/7	89/6	2,605,203
National Provident, 48, Gracechurch Street, E.C. *Act.* and *Sec.*, Arthur Smither .. .. M	1835	50/2	66/3	91/1	5,486,651
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, C. Seton Lindsay. *Sec.*, Wm. R. Collinson .. M	1845	48/9	66/-	96/11	53,949,899
North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princes Street, Edinburgh. *Life Man.* and *Act.*, London H. Cockburn, *Sec.*, F. W. Lance. *Further particulars see page* 775 .. .. .. P	1809	49/10	66/1	91/11	11,211,464
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. .. .. P	1836	49/-	64/8	90/10	3,841,340
Norwich Union, Life, Norwich. *Sec.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C.	1808	45/8	59/6	85/3	4,297,940

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Title, &c., of Office.	A	B	C	D	E
					£
Patriotic Life, Fire, Accident, Employers' Liability, Fidelity Guarantee, and Burglary, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Saml. Hunter. London Office, 69, King William Street, E.C. *Man.*, Charles E. Strong .. P	1824	48/8	64 5	90 4	253,036
Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley .. .. P	1864	49 -	65 -	92 -	1,164,412
Pelican, Life, 70, Lombard Street, 57, Charing Cross, *Gen Man.*, James Sorley, F.I.A., F.R.S.E. P	1797	48 11	64 7	90 8	1,397,647
Provident Clerks Mutual Life Assurance Association, 27 and 29, Moorgate Street, E.C. *Sec.*, John E. Gwyer.. .. .. M	1840	46/4	62/8	92 2	2,150,000
Provident, Life, 50, Regent St. *Sec.*, H. W. Andras P	1806	49 5	64 6	90 2	3.268,887
Prudential Ordinary', Life, Holborn Bars. *Sec.*, D. W. Stable. *Further particulars see page 777* P	1848	49 6	65 11	91 11	20,879,584
Refuge, Life, Oxford Street, Manchester. *Joint Mans.*, Jas. Proctor & R. Wm. Green. London Office, 29, New Bridge Street .. .. P	1864	49 3	65 9	91 9	*1.525,956
Rock, Life Annuity. Capital in Redemption, Workmen's Compensation & Accident, 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. P	1806	42 5	55/11	81 2	*2,237,175
Royal, Fire, Life and Annuities. Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard St. *Sec.*, Jno. H. Croft P	1845	49 9	64 1	88 3	6,118,786
Royal Exchange Assurance, Fire, Life, Annuities, &c., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. .. . P	1720	48/11	65 -	92 7	*2,609,238
Sceptre, Life and Endowments, 40, Finsbury Pavement. E.C. *Sec.*, J. G. Phillips.. .. P	1864	48/8	64/8	90 6	856,385
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, N. B. Gunn. *Sec.*, W. G. Spens M	1826	51 9	66 3	90 1	4,202,029
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man.*, G. M. Low, F.F.A. *Joint Secs.*, J. J. McLauchlan and D. Y. Mills. London Office, 19, King William Street, E.C. *Sec.*, F. R. Leftwich. M	1831	50/3	65 5	90 9	4,378,423
Scottish Imperial, Life, 183, West George Street, Glasgow. *Man.* and *Act.*, James Stirling, F.F.A. London Office, 15, King William Street, E.C. P	1865	46/7	63/5	91/7	547,489
Scottish Life, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, King William Street, E.C. *Sec.*, George Struthers P	1881	49/5	64 6	90 5	593,982
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, Wm. G. Bloxsom. London Office, 8, King Street, E.C. *Man.*, H. E. Marriott .. .. P	1876	40 8	54 7	79 7	*420,674
Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Secs.*, J. Lamb and H. R. Cockburn. London Office, 17, King William Street E.C., and 17, Pall Mall, S.W. .. .. M	1837	41 6	54 9	81 7	12,000,000
Scottish Temperance, Life and Accident, 105, St. Vincent St. Glasgow. *Man.*, Adam K. Rodger. London Office, 96, Queen Street, Cheapside. *Man.*, W. A. Bowie .. . . P	188	48 6	63 9	89/10	588,760
Scottish Union and National, Fire, Life, and Annuities, 35, St. Andrew Square, Edinburgh. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William Porteous.. P	1824	50 -	65 -	90/-	4,002,992
Scottish Widows' Fund, Life and Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, A. H. Turnbull. *Sec.*, J. J. P. Anderson. London Office, 23, Cornhill, E.C. *Sec.*, J. W. Miller M	1815	51/9	66 3	90 7	15,800,000

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Title, &c., of Office.	A	B	C	D	E
					£
Standard Life, 3, George Street, Edinburgh. *Man.* and *Act.*, S. C. Thomson. London Offices, 83, King William Street, and 3 Pall Mall East. *Sec.*, J. H. W. Rolland .. .. .. P	1825	48 11	64 5	89 -	9,537,571
Star, Life, Annuities, Endowments, 32, Moorgate Street, City. *Act.* and *Sec.*, H. G. Hobson P	1843	48/9	64/11	90 6	5,105,004
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. Sewell. *Sec. & Gen. Man.*, E. Linnell. P	1810	49/2	66 6	94/2	4,789,000
Union, Fire and Life, Cornhill, and Baker Street. *Sec.*, C. Darrell .. .. .. P	1714	48/9	64/6	90 10	*2,443,580
United Kent, Life and Annuities, High Street, Maidstone. *Gen. Man.*, Walter L. Seyfang. London Office, 124, Cannon St., E.C. *Man.*, A. Wallis P	1824	49 8	64/3	90 5	*579,107
United Kingdom Temp., &c., Life, 1, Adelaide Place, London Bridge. *Sec.*, Johnson Brooks M	1840	48/10	64 11	90 6	7,250,000
University, Life, 25, Pall Mall, S. W. *Act. & Sec.*, R. Todhunter, M.A. .. .. .. P	1825	49 11	65 4	91 5	956,604
Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. *Sec.*, Arthur J. Cook, A.I.A. .. .. .. M	1860	49/3	65 7	93 -	106,137
Wesleyan and General, Life, Annuities, Sickness, Corporation St., Birmingham. *Gen. Man.*, R. A. Hunt, F.S.S., A.I.A. London Office, 18, New Bridge Street, E.C. .. .. .. M	1841	48 9	66 6	96/3	552,333
Westminster and General, Life, 28, King St., Covent Garden, W.C. *Act.*, Ernest Woods, F.I.A. P	1836	48 10	65 -	90/6	629,346
Yorkshire, Fire and Life, St. Helen's Square, York London Office, 2, Bank Buildings, Princes Street. *Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page* 770 .. P	1824	49 1	64/9	91 7	936,323

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Med. Prof., and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £150,000.

ESTABLISHED 1809.

NORTH BRITISH and MERCANTILE

INSURANCE COMPANY.

Chief Offices:

61, Threadneedle St., LONDON. | 64, Princes St., EDINBURGH.

Branch Offices in all Important Centres.

TOTAL FUNDS

At 31st December, 1900.

Over Fourteen-and-a-half Millions Sterling.

INCOME FOR 1900,

£3,067,923.

Ninety per cent. of Life Profits divided amongst the Assured on the participating scale.

THE PROFITS ARE DIVIDED EVERY FIVE YEARS.

NEXT DIVISION—31st DECEMBER 1905.

Endowment Assurances	**Three-fold Option Policies**
5% Investment Policies	**Death Duty Policies**
Policies payable during lifetime	**Partnership Insurances**
Premium ceasing at an agreed age	**Annuities on one or more lives**
Pensions	**Provident Insurances on Children**

FIRE DEPARTMENT.

Property of nearly every description, at home and abroad, insured at the lowest rates. Losses by Lightning, Damage by Explosion of Gas in buildings (other than Gas Works), made good. Rents of Buildings Insured.

It is worthy of notice that while the Company transacts both Fire and Life Insurance Business, the Accumulated Funds of each Department are, by Special Act of Parliament, kept *entirely separate and distinct*, the funds of the one Department not being available for the obligations of the other. The Funds of each Department are accordingly, in this Company, *separately invested*.

☞ ***Prospectuses and full information may be obtained from the Chief Offices as above, or any of the Company's Agencies and Branches.***

ATLAS ASSURANCE CO. LTD.

HEAD OFFICE:

92, CHEAPSIDE, LONDON, E.C.

Established in the Reign of George III.

Capital £1,200,000

Annual Income £670,375

Assets £2,409,307

Claims Paid over £15,000,000.

HOME BRANCH OFFICES—

LONDON—West End, 4, Pall Mall East, S.W.
LONDON, CITY—81, Gt. Tower St, E.C.
BIRMINGHAM—9, Bennett's Hill.
BRISTOL—20, Clare Street.
LEEDS—1, East Parade.
LIVERPOOL—0, Tithebarn Street.
MANCHESTER—30, Booth St., Cooper St.
GLASGOW—149, West George Street.
DUBLIN—55, Dawson Street.

LIFE DEPARTMENT.

ABSOLUTE SECURITY.—The Life Funds of the Company (including the Paid-Up Capital) are nearly 40 per cent. of the total amount assured by the Company's Life Policies, including Bonuses. In addition, there is the protection of the Uncalled Capital of over £1,000,000.

LARGE BONUSES.—The Bonuses have always been large, and the increased reserves made at the valuation of 31st December, 1899, accompanied by the substantial reduction in the expense ratio, add materially to the security for future Bonuses.

MODERATE RATES OF PREMIUM.

LIBERAL GUARANTEED SURRENDER VALUES.

POLICIES FREE FROM RESTRICTIONS.

FIRE DEPARTMENT.

INSURANCES are granted on nearly all classes of risks at current rates.

SURVEYS MADE AND RATES QUOTED free of Expense.

LOSSES OCCASIONED BY LIGHTNING will be paid whether the property be set on fire or not.

LOSS OR DAMAGE caused by **EXPLOSION OF COAL GAS** in any building insured will be made good.

SEVEN YEARS' POLICIES granted on payment of Six Years' Premiums.

SAML. J. PIPKIN, *General Manager.*

Prudential Assurance Compy.,

LIMITED,

HOLBORN BARS, LONDON.

Directors:

EDGAR HORNE, Esq., *Chairman.*
Sir HENRY HARBEN, *Deputy-Chairman.*

ROBERT BARNES, M.D., F.R.C.P.
H. A. HARBEN, Esq., J.P.
W. J. LANCASTER, Esq.
W. T. PUGH, Esq.
PERCY T. REID, Esq.
J. W. SIMMONDS, Esq., J.P.
THOMAS WARRIE, Esq., J.P.

Actuary: Fredk. Schooling, Esq. **Assist. Actuary:** E. A. Rusher, Esq.
Secretary: D. W. Stable, Esq. **Assist. Secretary:** J. Smart, Esq.
Assist. Managers: F. Haycraft, Esq. A. C. Thompson, Esq.
Joint General Managers: Thos. C. Dewey, Esq. Wm. Hughes, Esq.

Every description of Life Assurance and Annuity Business Transacted.

INVESTED FUNDS - **£42,000,000.**

The Last Annual and Valuation Reports can be had on application.

BRITISH EQUITABLE

ASSURANCE COMPANY,

QUEEN ST. PLACE, LONDON, E.C.

Directors.

ALFRED HENRY BAYNES, Esq.
FRANCIS FLINT BELSEY, Esq., J.P.
ALFRED CONDER, Esq., F.R.I.B.A.
WILLIAM HY. GOVER, Esq., LL.B.
WM. HOWSE GROSER, Esq., B.Sc.
MONTAGU HOLMES, Esq., F.S.I.
ROBERT PARKER TAYLOR, Esq.
THOMAS HENRY WELLS, Esq.

Auditors.

HARRY MAYNARD CARTER, Esq., F.S.A.A., WILLIAM HENRY MILLS, Esq.
JAMES HENRY YOXALL, Esq., M.P.

WORLD-WIDE UNCONDITIONAL POLICIES.

The Form of Policy adopted by the Company is free from all restrictions as to Foreign Travel and other Conditions.

Whole Life Policies made payable in Lifetime without extra Premium by application of profits.

IMMEDIATE PAYMENT OF CLAIMS. SEPARATE USE POLICIES.
Life Abstainers' Section. Thrift Assurance for Children.

ACCUMULATED FUND - - £1,775,155
PAID IN CLAIMS - - - - 2,572,755

JOHN WILKINSON FAIREY, *Manager.*

CARRIAGE ACCIDENTS, DRIVERS' ACCIDENTS, HORSE INSURANCE.

IMPERIAL ACCIDENT, LIVE STOCK AND GENERAL INSURANCE COMPANY, LIMITED.

ESTABLISHED 1878.

Head Offices: 17, PALL MALL EAST, LONDON, S.W.

Horses insured against **Death** from **Accident** and **Disease.**
Carriages insured against **Damage** by Collision, Falling, Bolting or Kicking of the Horses, or being Run into.
Employers insured against **Drivers' Accidents** to **Persons** and **Property of Third Persons,** by Collisions, Carelessness & Drunkenness of Drivers, Horses Bolting, Kicking, &c.

CLAIMS PAID EXCEED £200,000

Prospectuses, &c., sent post free on application.
AGENTS REQUIRED. B. S. ESSEX, Manager.

General Life Assurance Co.

ESTABLISHED 1837.

CAPITAL AND RESERVES, £2,850,000.

BOARD OF DIRECTORS.

Chairman—Sir ANDREW LUSK, Bart. *Deputy Chairman*—WM. STRANG, Esq.
Hon. R. C. GROSVENOR | HENRY WILLIAM RIPLEY, Esq.
JAMES SMITH MACK, Esq., J.P., D.L. | ALFRED JAMES SHEPHEARD, Esq.
CHARLES PRICE, Esq. | Rt. Hon. Sir RALPH WOOD THOMPSON, K.C.B.

MEDICAL OFFICERS.

P. H. PYE-SMITH, Esq., M.D., F.R.S., 48, Brook Street, W.
FREDERICK TAYLOR, Esq., M.D., 20, Wimpole Street, W.

Advances made on Reversions, Life Interests, and on Personal Security in connection with a Life Policy. Six per cent. reduction to Medical Men.

103, Cannon Street, London, E.C. JOHN ROBERT FREEMAN, *Manager and Secretary.*

BRITISH WORKMAN'S AND GENERAL

ASSURANCE COMPANY, LIMITED.

ESTABLISHED 1866.

SPECIAL ADVANTAGES

OFFERED BY THE COMPANY TO ITS POLICY HOLDERS.

(1) Absolute Security.
(2) Equitable premium rates, comparing most favourably with other offices.
(3) Policies free from objectionable conditions and restrictions.
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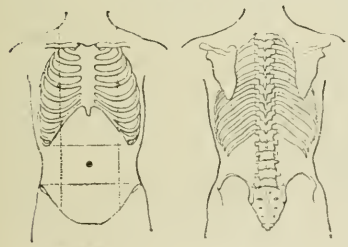

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Sixteen Resident Clinical Appointments are open to students annually. All Clerkships and Dresserships are awarded without fee.

Two Broderip Scholarships, of the value of **£60** and **£40** respectively, are awarded every year for proficiency in Clinical Knowledge.

The Murray Scholarship, founded in connection with the University of Aberdeen, is awarded every third year to a Student of the Middlesex Hospital. Next award in 1904.

The following are awarded annually:—

The Governors' Prize of **£21** (Clinical Work in Out-Patient Dept.).

The Hetley Prize, value **£25** (Clinical Medicine, Surgery and Obstetrics).

The Lyell Medal, value **£5 5s.** (Surgical Anatomy & Practical Surgery).

The Leopold Hudson Prize, value **£11 11s.** (Surgical Pathology and Bacteriology).

The Freeman Scholarship, value **£30** (Obstetric Medicine and Gynæcology).

Prizes.—A Prize in Elementary Anatomy and Biology, value **£5 5s.**, will be given to the Student who, at the end of his first Winter Session, shall pass the best written and practical examination.

An Exhibition of the value of **£10 10s.**, will be given at the end of his second Winter Session to the Student who shall pass the best written and practical examination in Anatomy and Physiology.

Middlesex Hospital Entrance Scholarships.—Entrance Scholarships in Classics, Mathematics, and Natural Science are offered for competition at the commencement of the Winter Session. Full particulars may be obtained on application to the Dean. Successful candidates are required to become general students of the School. Next Examination end of Sept., 1902.

Scholarships in Anatomy and Physiology.—An Annual Scholarship of the value of **£60** is open to Students of the Universities of Oxford and Cambridge who have already passed or completed the curriculum for the professional examinations in Anatomy and Physiology. *Subjects:* Anatomy and Physiology, including Histology. Next Examination end of Sept. 1902.

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For further information apply to **W. PASTEUR,** *Dean.*

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SESSION 1901-1902.

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The **Winter Session** opens on 15th October (Practical Anatomy, 1st October), and closes on the 21st March; the **Summer Session** opens at the beginning of May and closes about the end of July.

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Dean—PROFESSOR A. R. SIMPSON, M.D.

The Faculty embraces fourteen Chairs and twelve Lectureships; and attached to these Chairs there are about thirty Assistants and Demonstrators. Instruction is given in all the branches of Medical Science, viz. :—

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Zoology—J. Cossar Ewart, M.D.
Botany—Isaac Bayley Balfour, M.D., D.Sc.
Physics—J. G. MacGregor, D.Sc., LL.D.
Anatomy—Sir Wm. Turner, K.C.B., M.B., D.C.L., LL.D.
Physiology—E. A. Schafer, LL.D.
Materia Medica—T. R. Fraser, M.D., LL.D
Pathology—Wm. S. Greenfield, M.D.
Forensic Medicine—Sir Henry D. Littlejohn, M.D., LL.D.
Public Health—C. Hunter Stewart, M.B., D.Sc.
Medicine—John Wyllie, M.D., LL.D.
Surgery—John Chiene, M.D.
Midwifery—Alex. Russell Simpson, M.D.
Clinical Surgery—Thos. Annandale, M.D.
Clinical Medicine—T. R. Fraser, M.D.; Wm. S. Greenfield, M.D.; John Wyllie, M.D.; A. R. Simpson, M.D. (on Diseases of Women).

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Diseases of the Eye—G. A. Berry, M.B.
Clinical Instruction on the Diseases of Children—Staff of Royal Hospital for Sick Children.
Embryology and Vertebrate Zoology—J. Beard, D.Sc.
Regional Anatomy—D. Hepburn, M.D.
Advanced Practical Physiology—T. H. Milroy, M.D., B.Sc.
Experimental Pharmacology—W. C. Sillar, M.B., B.Sc.
Pathological Bacteriology—J. M. Beattie, M.D.
Physics—C. G. Knott, M.A., D.Sc.
Diseases of the Larynx, Ear and Nose—P. McBride, M.D.
Tropical Diseases—A. Davidson, M.D
Diseases of the Skin—W. Allan Jamieson, M.D.

Practical Instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs; and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Fever Hospital, and the Asylum for the Insane. Upwards of 1,800 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M); and Diplomas in special branches of Medical and Surgical Practice may also be conferred on graduates in Medicine and Surgery of the University.

The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12), amount to about £115, and the Matriculation and Examination Fees to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,600, and that of the other Bursaries etc., tenable by Students of Medicine, amounts to about £1,820.

Instruction is also given in Public Health, and the Degrees of B.Sc. and D.Sc. in Public Health are conferred by the University.

Residences for Students, Graduates, and others, situated within easy reach of the University, afford excellent board and lodging on very moderate terms.

Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Dean of the Faculty of Medicine, or from the Clerk of Senatus; and full details are given in the University Calendar, published by James Thin, 55, South Bridge,

By Authority of the Senatus,

August, 1901. L. J. GRANT, *Secretary of Senatus.*

University of Durham.

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DEGREES IN MEDICINE, SURGERY, AND HYGIENE.—Six Degrees and one Diploma are conferred by the University of Durham—viz., the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery, and Master in Surgery, Bachelor in Hygiene, and Doctor in Hygiene; and Diploma in Public Health.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree after examination only.

The first three Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle.

A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

The Extra Arts Examination must be passed previously to the candidate's entry for his Final Examination for the Degree.

All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, or may be obtained from the Secretary at the College.

Scholarships, &c.—A University of Durham Scholarship, value £100, for proficiency in Arts awarded annually to full Students in their first year only. The Dickinson Scholarship—value, the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery, and Pathology. The Tulloch Scholarship—value, the interest of £400—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—interest on £680—for Comparative Pathology. The Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, has bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value, the interest of £225—for Midwifery and Diseases of Women and Children. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books and Honours Certificates are awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Infirmary contains 280 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers, by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying-in Hospital, where there is an Out-door Practice of about 300 cases annually.

FEES.

(*a*) A composition Ticket for Lectures at the College may be obtained—

I.—By payment of 70 guineas on entrance.

II.—By payment of 45 guineas at the commencement of the First Year, and 35 guineas at the commencement of the Second Year.

III.—By three annual instalments of 35, 30, and 20 guineas respectively, a the commencement of the Sessional year.

(*b*) Fees for attendance on Hospital Practice:—

For 3 months' Medical and Surgical Practice	..	..	..	..	£5	5	0
„ 6 „ „ „ „	..	..	..	..	£8	8	0
„ 1 year's „ „ „ „	..	..	..	..	£12	12	0
„ Perpetual „ „ „ „	..	..	..	..	£26	5	0

Or by three instalments at the commencement of the Sessional year—viz., First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments—viz., First year, 14 guineas; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(*c*) Single courses of Lecture, 5 guineas.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to the House-Physician at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

VICTORIA UNIVERSITY.

The Yorkshire College,

LEEDS.

DEPARTMENT OF MEDICINE.

The Seventy-second WINTER SESSION will open on the 1st October, 1902. Entries are also taken for the SUMMER SESSION which begins on May 1st.

This College, together with the Leeds Infirmary, offers exceptionally favourable conditions for the education of Medical Students, and is equipped on the best modern lines.

The Prospectus and particulars of Entrance Scholarships may be obtained from the Registrar of the College, and information regarding Medical Studies from the Dean of the Department.

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For boys who are intended for the Medical profession no school in England possesses equal advantages; special training is provided for the London Matriculation and Preliminary Scientific examinations, and owing to the generosity of the London Hospitals, there are NINE scholarships *ranging in value from 120 guineas to £150*, giving a free education, offered ANNUALLY to boys leaving.

The buildings are admirably situated and well arranged; an excellent Library, Sanatorium, Gymnasium, Swimming Bath, Fives Court, and Carpenter's Shop are provided. The Cricket Grounds are very extensive. There is a Lower School for junior boys.

The College charges have been kept singularly moderate. The fees paid by the sons of Medical Men are at a reduced rate.

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Scholarships, open to all comers, value £30 a year, are offered ANNUALLY.

School Lists giving full information as to Fees, Scholarships, Exhibitions, &c., School Prospectuses, and Forms of Application, may be obtained on application to the Bursar.

RESULTS OF EXAMINATIONS 1899 & 1900.

36 Boys passed at the London Matriculation Examination; 13 passed the Preliminary Scientific Examination; 18 Boys obtained Higher Certificates at the Joint Universities' Examination, and 67 obtained Lower Certificates.

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The Faculty of Medicine embraces twelve chairs, from which instruction is given in all the main branches of Medical Science.

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Rules and Terms of Admission may be obtained from the *Honorary Secretary*—

Miss MARY WARDELL, STANMORE, MIDDLESEX.

LANSDOWN HOSPITAL & NURSING HOME,

(430 FEET ABOVE SEA.) **BATH.** (430 FEET ABOVE SEA.)

(Founded under the Jennings' Trust)

THIS INSTITUTION meets the requirements of all classes of Invalids needing

Baths & Physical Treatment

combined with SKILLED NURSING.

For Admission, address THE MATRON.

ST. JOHN'S, *Telephone No. 05951.*

YORK ROAD, HOVE, SUSSEX.

NURSING HOSTÉL.

WELL recommended. Comfortable Home, due South. For INVALIDS OR THOSE REQUIRING REST. Moderate Fees. BATHS. MASSAGE. ***TRAINED NURSES SUPPLIED.***

Apply - LADY SUPERINTENDENT.

THE

ROYAL SCOTTISH NURSING INSTITUTION.

FOUNDED 1872.

Patroness - H.I.R.H. THE DUCHESS OF SAXE-COBURG AND GOTHA.

MEDICAL, SURGICAL, FEVER, MASSAGE, and MONTHLY NURSES

Supplied on application to the Matron.

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Trained MALE Nurses.

THE HAMILTON ASSOCIATION

57, Park Street, Grosvenor Square, LONDON, W.

Supply HOSPITAL TRAINED MALE NURSES, for Medical, Surgical, Mental, and Dipsomania Cases, in either town or country, at the shortest notice, day or night. Terms from TWO to FOUR GUINEAS a week. Certificated Masseurs sent out (by the hour if desired). Travelling Attendants for Invalids.

Telegraphic Address: "ALUMNUS," LONDON.

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INVERESK, MIDLOTHIAN.

HOME for MILD MENTAL, HYSTERICAL, or NERVOUS CASES, and BACKWARD CHILDREN requiring careful personal supervision.

Detached House, with garden, croquet lawn, and pleasant surrounding scenery; one mile from golf links, five minutes from Railway Station, twenty minutes by rail to Edinburgh. Highly recommended by leading Mental Specialists, former patients, &c.

Apply - - THE MISSES SPENCER.

Open-Air Treatment of Consumption

WHITMEAD HILL, near FARNHAM.

J. HURD-WOOD, M.D. — **Resident Matron.**

THE House stands in 18 acres of fragrant pines and heather, on a southern slope of Crooksbury Hill, which shelters it from the north. Pine woods also shelter it from the east; it faces due south, and all the rooms are lighted by electricity, and have fire places; corridors, drawing-room, etc., being heated in addition by hot-water coils. Verandah and verandah balcony 63 ft. by 15 ft.

FEE - - - £5 5s

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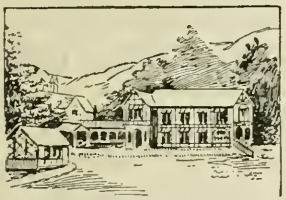

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ESPECIALLY BUILT FOR THE

Open-air Treatment of Consumption.

Far from dusty roads, 350 feet above the sea level, in well wooded grounds.

Electric Light. Gravel Soil. Unlimited Water Supply; 6 Shelters & Verandahs. Trained Nurses.

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CONSUMPTION:—OPEN-AIR TREATMENT.

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SHOTLEY BRIDGE. *Dr. E. W. DIVER.*

SITUATED on a slope of the Derwent Valley. Lovely scenery; bracing air. Arrangements admit of Patients living almost entirely in the open. Apply to the Resident Physician. *Telegrams: "Diver, Shotley Bridge."*

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MEDICAL & SURGICAL HOME & NURSING INSTITUTE

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PRIVATE HOME FOR PAYING PATIENTS.

All cases received and treated by their own doctors—Infectious and Mental cases excepted. Fully trained hospital (medical, surgical, maternity, massage) nurses supplied at any hour.—*Apply to* the Sister-in-Charge.

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Victoria Home for Paying Patients of Both Sexes.

In Connection with the Victoria Institute for Trained Nurses.

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NORDRACH-UPON-MENDIP

SANATORIUM, OPENED JANUARY, 1899.

THIS SANATORIUM was the first to be established in England for carrying out **The Treatment of Phthisis**

strictly on the lines of Dr. OTTO WALTHER, of Nordrach, Germany, with whom Dr. THURNAM has resided for two years. Situated on the Mendip Hills, 862 feet above the sea. Heating by Hot-water Pipes. Electric Light. 65 acres of private woods and grounds.

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Inglewood Private Sanatorium

ST. LAWRENCE, ISLE OF WIGHT.

FOR OPEN-AIR TREATMENT OF PHTHISIS.

IS situated in the beautiful undercliff in 30 acres of park, forest and undulating woodland, on the south slope of a hill that rises at the back about 800 ft. above sea level and sheltered from north and east winds, commanding charming views of land and sea. The neighbourhood has the *highest record of sunshine in the British Isles.*

Special Features.—Detached night châlet, facing south and warmed with hot-water pipes. Electric light throughout the building, also in day and night shelters, hot-water heating, dry and porous soil, pure water, bracing air, utmost privacy. Experienced RESIDENT PHYSICIAN.

INCLUSIVE TERMS - - 3 to 4 Guineas.

For particulars and booklet "Some Results of Sanatorium Treatment of Phthisis," apply to THE SECRETARY, Inglewood Sanatorium, ST. LAWRENCE, I.W.

The Cotswold Sanatorium

FOR TUBERCULOSIS.

THIS Sanatorium takes patients suffering from all forms of Tuberculous Disease. It is situated in the Cotswold Hills, near Cheltenham, at an elevation of 800 feet, and is surrounded by the most magnificent scenery in England. It stands in its own grounds, nearly seventy acres in extent, and is surrounded by a tract of wooded common land of about 1000 acres. Each room has hot and cold water laid on, is warmed by hot-water radiators, and lighted by electr c light. The verandahs are warmed and lighted in the same way.

A farm, in connection with the Sanatorium, supplies milk, butter and cream, from cows which have been tested for tuberculosis and found free from it.

One of the Principals and the Assistant Medical Officer live in the Sanatorium. The charges are five guineas weekly, inclusive. There are a few cubicles at four guineas weekly; but these are not available for ladies or for advanced cases.

For further particulars apply to **THE SECRETARY, 2, Ormond Place, CHELTENHAM**

TELEGRAMS: "RICKERBY," CHELTENHAM.

OPEN-AIR TREATMENT of CONSUMPTION & DISEASES of the CHEST.

Dr. Hettinger's Sanatorium

NORDRACH in the Black Forest,

Railway Station, "BIBERACH-ZELL." BADEN (Germany).

SPECIALLY designed and equipped in accordance with the latest hygienic requirements. Newly built on carefully selected ground, sheltered from the winds and surrounded by imposing pine forests. Beautifully mild and sunny climate. Every comfort. 40 rooms.

Special Feature: CAREFUL INDIVIDUAL SUPERVISION BY THE THREE RESIDENT PHYSICIANS.

OPEN ALL THE YEAR ROUND.

Illustrated Prospectus free on application to—

C. F. SCHENK, Sherwood, Crowther Road, SOUTH NORWOOD, S.E.

THE

Mount Vernon Hospital for Consumption,

HAMPSTEAD & NORTHWOOD (Middlesex).

And FITZROY SQUARE.

THE Hospital at Hampstead has accommodation for **140** Patients, and is situated on the Hills on the North-West of London, 400 feet above sea level. A **COUNTRY BRANCH** is being erected at Northwood Middlesex, to receive **50** Male and **50** Female Patients. There is an Out-Patient Department in Fitzroy Square, where patients are seen daily. TELEPHONE No. 5585, GERRARD.

The "OPEN-AIR" Treatment is carried out.

Funds are greatly needed, there being *no endowment whatever.*

Bankers:	Secretary:
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MENTALLY FEEBLE and BACKWARD CHILDREN

SPECIAL EDUCATION is given to a limited number of *select* pupils in the well-appointed residence of the former Medical Superintendent of one of the largest Public Training Institutions for Feeble-minded Children. Situation high and bracing. Kindergarten, Sloyd, Manual and Physical Training by Experienced Teachers. Music, Languages, &c., as required. Outdoor Work, Gymnasium, and Workshop. Extensive Gardens and Grounds, contiguous with Richmond Park.

Home comforts, individual attention, and suitable recreations.

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WEAK INTELLECT.

GROSVENOR,

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EDUCATIONAL HOME FOR BOYS OF THE UPPER CLASSES, under experienced and successful Management. Highly recommended by Medical Men. *For Terms, address* MISS ARKELL.

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DEAF MUTES,

STUTTERERS, and WEAK-MINDED CHILDREN taught on the most modern and scientific principles. Highest References.

Downside Lodge, Chilcompton,

Near BATH.

THIS HOME (long established) for the Training and Education of Girls of the Upper Classes, who are Mentally Afflicted and unfit for ordinary schools, is under the personal care and superintendence of MISS PAGE, who has had much experience in such cases. Adults also received. References to Medical Men and others. Terms, etc., on application.

RESIDENT PATIENTS.—Any Invalid requiring a Home with or without treatment, in the house of a Medical Man in any part of the Kingdom, is requested to apply for a List giving full particulars of such houses to HON. SEC., ASSOCIATION OF MEDICAL MEN RECEIVING RESIDENT PATIENTS, BODORGAN MANOR, BOURNEMOUTH.

Education and Home Comforts for Boys of Feeble Intellect.

Bearsted House, Bearsted

(NEAR MAIDSTONE.)

Superintendent and Proprietor: G. T. A'VARD.

Late Head Master of Earlswood Asylum.

BEARSTED HOUSE stands on its own grounds of four acres, and is pleasantly situated. A Medical Gentleman remarked of Bearsted: "It is one of the prettiest and healthiest villages in England." The house is commodious and the rooms are lofty. The grounds are secluded and are not overlooked in any way.

Bearsted Station is on the L. C. & D. Ry., from Victoria, etc. without changing carriages). From the South and the South-East Coast *via* Ashford. BEARSTED HOUSE is Five minutes' walk from Bearsted Station.

"I can with the greatest confidence recommend any parent who has a child with a clouded intellect to send it to Bearsted House."—JOHN JOHNSTON, Surgeon.

A Doctor writes to the *Lancet*: "A better place for weak minded boys there cannot possibly be. A personal visit has convinced me that many parents with afflicted children would be rejoiced to hear of such a home for them."

"Mr. A'VARD has a peculiar tact in his dealings with weak-minded children, which enables him to gain an influence over them that I have not seen in any other person. He is an excellent disciplinarian, is kind in his manner, and was always a favourite with his pupils. I wish him every success in the undertaking he has entered upon to establish a Home for those of feeble intellect."—BEN HALL, M.B. Lond.

FULHAM, *June*, 1897.—"I really feel happier about my son than I ever have done, he appeared so happy and looked so bright."

"At the time I held the office of Head Master to the Earlswood Asylum, in Mr. A'VARD I had a very energetic and painstaking coadjutor. He is a thorough disciplinarian, patient and kind to the pupils. When I left Earlswood, Mr. A'VARD was appointed my successor. He is a good musician, playing the organ and conducting the Asylum Military Band. He is well acquainted with the various methods of combining instruction with amusement, and duly qualified to take charge of persons of feeble intellect. I heartily wish him success."—WILLIAM WOOD.

A Gentleman of the Press writes:—"The evident confidence you had inspired in those under your charge; also the bright happy faces and the at-homeness of all."

From a Father:—"Dear Sir, It was through Dr. Savage, of Bethlem Hospital, that I placed my son under your care some seven years ago. I am very glad that he recommended you, as I believe your treatment to be really good, and your establishment very healthy, airy and bracing."
ST. JOHN'S WOOD.

"DEAR MR. A'VARD,—I am so pleased with the improvement in my boy. He is altogether different, and he tells me he has never been as happy in his life as he has been with you."

"I have heard Mr. A'VARD spoken of by the friends of pupils in the highest estimable manner. I consider him a man of great integrity."—ROBERT JONES, Esq., M.D. Lond., M.R.C.S.
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"On the advice of doctors in London I have just brought my son here, and am leaving with the assurance that the boys are in excellent hands. There are no bad cases, and the lads appear cheerful and happy, with every comfort about them."—R. D., Captain, Royal Navy.

ESTABLISHED SEVENTEEN YEARS.

BOREATTON PARK.

THIS PRIVATE ASYLUM, which was founded by the late W. H. O. SANKEY, M.D., F.R.C.P., for the reception of a limited number of ladies and gentlemen mentally afflicted, is now conducted on the same lines by his son, E. H. O. SANKEY, M.A., M.B., B.C. Cantab.

Dr. BURD, Newport House, Shrewsbury, M.D. and M.C. Cantab., Consulting Physician to the Salop Infirmary, and to the Salop and Montgomery Lunatic Asylum, &c., is Consulting Physician.

The Ladies' Division is directly supervised by Mrs. SANKEY.

The Mansion stands high, among handsomely laid out gardens in the midst of a picturesque deer park (about 70 head of deer are kept), and commands a magnificent view of Welsh mountain scenery.

Carriages, horses, lawn-tennis, golf, trout and other fishing are provided.

Arrangements can be made to enable friends of patients to reside in the House as Boarders if so desired.

The Asylum is situated about ten miles from Shrewsbury, within easy distance of Baschurch Station, G.W.R., whither carriages can be sent at any time for visitors.

Letters and Telegrams should be addressed to

DR. SANKEY, Boreatton Park, BASCHURCH, SALOP.

Springfield House

Near Bedford.

(WITHIN AN HOUR OF LONDON BY MIDLAND,)

AN INSTITUTION

For the CARE & CURE OF THE INSANE

Under the Personal Direction of

DAVID BOWER, M.D., &c.,

Late Resident Medical Superintendent of Saughton Hall Asylum, Edinburgh; and

MISS NORTON,

For 13 years Lady Superintendent of Saughton Hall,

(ASSISTED BY LADIES' AND GENTLEMEN'S COMPANIONS.)

Dr. BOWER attends at 5, Duchess Street, Portland Place, W., on Tuesdays, from 3 to 4.

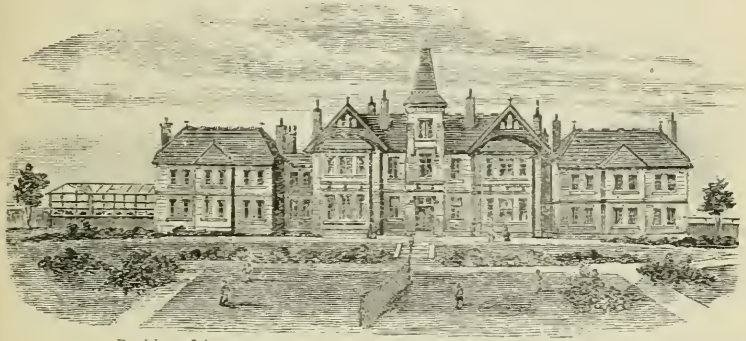
Terms (Three guineas per week) and Vacancies are advertised each week in the *British Medical Journal* and the *Lancet*.

FOR THE TREATMENT OF MENTAL DISEASES

Shaftesbury House,

FORMBY-BY-THE-SEA, near LIVERPOOL.

TELEPHONE—8 FORMBY.



Resident Licensees—

STANLEY A. GILL, B.A., M.D., M.R.C.P. Lond., formerly Medical Superintendent to the Liverpool Lunatic Hospital.

Mrs. STANLEY GILL.

Visiting Physician—

T. R. GLYNN, M.D., F.R.C.P. Lond., Consulting Physician, Liverpool Infirmary, and Professor of Medicine University College, Liverpool.

THIS House, specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen mentally afflicted, is delightfully situated near the coast between Liverpool and Southport, so that patients have the benefit of pure bracing sea air for which Formby is noted.

The House is in the country, and stands in several acres of ornamental, well-wooded grounds, the surroundings being in every way bright, cheerful, and pleasant.

As the Licensees reside on the premises they are able to devote the whole of their time to the constant supervision of the patients. All kinds of out- and in-door amusements and occupation provided. Voluntary boarders without certificates admitted.

TERMS MODERATE.

N.B.—Trained Mental Nurses can be supplied for Home Care.

HENDON GROVE, HENDON.

A PRIVATE ASYLUM FOR LADIES MENTALLY AFFLICTED.

The Grounds are very extensive, and various amusements are provided.

TERMS FROM FOUR GUINEAS A WEEK.

For further particulars, apply to Mrs. HICKS, or to the Resident Medical Superintendent (F. W. EDRIDGE-GREEN, M.D., F.R.C.S.).

The York Asylum,

A REGISTERED HOSPITAL

FOR THE CARE and CURE OF THE INSANE.

THIS Asylum was established in the year 1777, by Voluntary Subscriptions, as a benevolent Institution for the Care and Treatment of the Insane; and under the Lunacy Act of 1845, it became one of the Registered Hospitals.

Its management is conducted by a Committee of Governors whose sole object is the comfort and well-being of the Patients, and who derive no pecuniary advantage from such office.

The Hospital is inspected twice a year by the Commissioners in Lunacy, and special visitors, Ladies and Gentlemen, are appointed by the Courts of Governors to visit every month.

The situation is in one of the best suburbs of York, and within one mile of the Railway Station. The pleasure grounds and gardens occupy about 22 acres exclusive of the farm buildings and pasture grounds. Cricket, lawn tennis, and other out-door games and occupations are provided, and the building is suitably and comfortably furnished, and provided with good billiard room, American bowling alley, and recreation hall. The present accommodation is for 160 Patients in about equal numbers of each sex. Patients can have private apartments and special attendants if desired.

In addition to Two Resident Medical Officers, a Consulting Physician regularly visits the Patients.

Terms and particulars may be obtained on application to—

DR. HITCHCOCK, Resident Medical Superintendent.

Telegrams: "DICKSON, BUXTON." *National Telephone:* 130, BUXTON.

WYE HOUSE ASYLUM, BUXTON. DERBYSHIRE.

ESTABLISHED IN 1858, FOR THE

Care and Treatment of the INSANE of the Higher and Middle Classes.

THE NEW INSTITUTION, COMPLETED 1901.

Resident Physician and Proprietor: F. K. DICKSON, J.P., F.R.C.P. & F.R.C.S. Ed.
Chaplain: Rev. C. C. NATION, M.A. (Vicar of Buxton and Rural Dean).

THIS Institution has been established for the **Reception of Patients of Both Sexes of the Higher and Middle Classes,** for whom it is admirably adapted by its position and appointments. It is erected on an eminence surrounded with scenery of the most varied character, and the views from the House and Terraces extend over many miles of picturesque country. There is also in connection a Summer Residence on the coast of North Wales. The House is furnished throughout on the most liberal scale, and fitted up and arranged as a Gentleman's Family Residence.

The Sanitary arrangements and Ventilation are modern in design and *perfect* in construction, and are certified to be so by the Sanitary Authority.

The Proprietor lives in the House, and is assisted in his duties by a Resident Assistant Physician, and an experienced Lady Superintendent.

Every exertion is made to promote health and comfort, both by moderate bodily employment and by variety in amusements, such as reading, music, drawing, excursions, golf, billiards, croquet, lawn tennis, theatricals, re-unions, &c. A library is provided, containing some 2,000 works of varied character, suited to the condition of the patients. Also periodicals, magazines, and newspapers.

Due provision is made for the spiritual welfare and consolation of the Patients, and Divine Service is held every Sunday in the Institution.

The Pleasure Grounds, which are very spacious, have been laid out in the most tasteful manner especially for the recreation of the Patients; and contain conservatories, lawns for croquet and tennis, a private golf course, and other outdoor games; also a theatre, billiard room, and workshop for the indoor occupation of Patients. The House is heated throughout by means of hot water apparatus and open fireplaces.

Buxton is directly accessible by the Midland and the L. & N.W. Railways. It is situated on the mountain limestone formation, 1000ft. above sea level. Being a watering-place, it affords exceptional advantages and varied recreations to convalescent Patients.

Particulars of Terms and Forms of Admission on application to THE RESIDENT PHYSICIAN.

Fisherton Asylum, Salisbury.

APPLY TO DR. FINCH.

BETHEL HOSPITAL, NORWICH.

ESTABLISHED A.D. 1713.

THIS Institution is an endowed Hospital, registered under the Lunacy Acts, and managed by a Board of Governors who have no pecuniary interest in its success, but whose sole object is to promote the comfort and well being of the Patients.

The Hospital is arranged for both sexes, and is especially adapted for those whose means will not permit of their being sent to an expensive and luxurious Institution for the Insane, and who may object to the associations of a pauper asylum.

The terms for admission are **thirty shillings per week,** which includes everything except clothing, carriage exercise, or any expenses incurred for amusement beyond the Hospital grounds.

CONSULTING PHYSICIAN:
SIR FREDERIC BATEMAN, M.D., F.R.C.P., LL.D.
(Consulting Physician to the Norfolk and Norwich Hospital).

RESIDENT MEDICAL SUPERINTENDENT:
JAMES FIELDING, M.D., M.R.C.S. Eng., L.R.C.P. Edin.

CLERK TO THE GOVERNORS:
FRANCIS HORNOR, QUEEN STREET, NORWICH.

MATRON:
MISS OXLEY *(Late Sister Guy's Hospital, London).*

APPLICATIONS FOR ADMISSION TO BE MADE TO THE
Resident Medical Superintendent, BETHEL HOSPITAL, NORWICH.

BAILBROOK HOUSE, BATH.

For the Care and Treatment of Ladies and Gentlemen Mentally afflicted.

ESTABLISHED 60 YEARS.

Resident Licensees—
DR. LIONEL A. WEATHERLY. | MRS. LIONEL A. WEATHERLY.

Beautiful Mansion standing in 45 acres of well-wooded Park, with lovely views of Bath and surrounding scenery. Fifteen minutes' drive from G.W.R. and Midland Stations, Bath. *Telephone No.* 49.

Horses & Carriages, Billiards, Lawn Tennis, Fishing, Boating and Golf.

VOLUNTARY BOARDERS RECEIVED.

Suitable LADY PATIENTS can be received into—

LANBRIDGE HOUSE "ANNEXE,"

a charmingly situated old-fashioned house standing in its own grounds

Terms inclusive from 4 to 15 guineas per week, according to circumstances of case and accommodation required.

KINGSDOWN HOUSE,

BOX, WILTS.

A Sanatorium Licensed for the Treatment of Diseases of the Brain and Nervous System in the Upper and Middle Classes.

Voluntary Patients (not under Certificates) also received.

The establishment is under the direct control of the Resident Medical Proprietor.

TERMS: 2 TO 5 GUINEAS WEEKLY.

Access: Box Station, G.W.R.; Bath, G.W.R. and Mid.R.

Further particulars can be obtained from— **H. C. MacBRYAN,**
Late London County Asylum, Hanwell, W.

DUBLIN.

HAMPSTEAD, GLASNEVIN, for Gentlemen; HIGHFIELD, DRUMCONDRA, for Ladies.

TELEPHONE No. 1032.

(Licensed under the Government Inspectors' Supervision), as Hospitals for the Medical Care and Treatment of Patients of the UPPER and MIDDLE CLASSES suffering from

MENTAL AND NERVOUS DISEASES.

Voluntary Patients admitted without Medical Certificates.

Relatives of Patients who desire to reside with Patients can do so. There are Cottages for special cases on the demesne (154 acres).

Further information can be obtained from the Resident Medical Superintendent, HENRY M. EUSTACE, M.D., any time at the above addresses, or at his Office, 41, GRAFTON ST., DUBLIN, on MONDAYS, WEDNESDAYS and FRIDAYS, at 2-3 p.m.

The Warneford Asylum, Oxford,

FOR THE CARE AND TREATMENT OF INSANE OF BOTH SEXES OF THE UPPER AND MIDDLE CLASSES.

President: THE RIGHT HON. THE EARL OF JERSEY.

Chairman of Committee: THE REV. WILLIAM INCE, D.D., Canon of Christ Church, and Regius Professor of Divinity in the University of Oxford.

THE Asylum is pleasantly situated on Headington Hill, and has been enlarged, the new accommodation being arranged, as far as is compatible with the requirements of an Asylum, in the manner of an ordinary private residence.

The ordinary charge for Patients is £2 2s. a week, but the Committee have power to alter the amount of charge at their discretion. When a reduction of the ordinary charge is asked, a statement of the circumstances of the Patient should be made by letter to the Committee.

Voluntary Boarders are also received.

Special Rooms and Attendants may be had if required.

Friends of Patients when corresponding may omit "Asylum," and address: "THE WARNEFORD," OXFORD.

For further particulars apply to the Med. Supt., **J. NEIL, M.D.**

COURT HALL,

KENTON, EXETER.

A Private Asylum for Ladies only.

ESTABLISHED IN 1869 AND LIMITED TO EIGHT PATIENTS.

REGULAR MEDICAL ATTENDANCE.

. . . CARRIAGE EXERCISE.

For Terms and Full Particulars, Address—

MISS MULES, *Resident Licensee.*

THE GOVERNORS OF
Bethlem Royal Hospital

ARE PREPARED TO RECEIVE A LIMITED NUMBER OF PATIENTS AT TWO GUINEAS A WEEK, INCLUSIVE.

All particulars may be obtained from the Resident Physician, or the Steward of the Hospital.

ST. GEORGE'S ROAD,
LONDON, S.E.

NORTHWOODS HOUSE,
WINTERBOURNE, NEAR BRISTOL.

A Sanatorium for Ladies and Gentlemen suffering from Nervous and Mental Disorders.

Situated in a large park in a healthy and picturesque locality, easily accessible by cab from Bristol, or from Fishponds, Yate, or Patchway Stations.

Voluntary Boarders received without Certificates.

For further information, see London Medical Directory, p. 2089, and for Terms, &c., apply to Dr. EAGER or Mr. W. EAGER, Resident Med. Proprietors, Northwoods House.

Dr. EAGER or Mr. W. EAGER *attends at* 64, *PARK STREET, BRISTOL, on Mondays and Thursdays, from* 12 *to* 3 *o'clock.*

ST. LUKE'S HOSPITAL,
LONDON, E.C.

ESTABLISHED 1751.

THIS Hospital was established for the TREATMENT OF MENTAL DISEASES of the Middle Classes. Preference is given to acute cases, and these are admitted either gratuitously or on payment of a weekly sum varying from 14s. to 30s., according to the circumstances of each. Patients are eligible for admission from any part of the United Kingdom. Forms of application may be had from, and enquiries addressed to, the Secretary, at the Hospital.

The CONVALESCENT ESTABLISHMENT in connection with the Hospital is at ST. LAWRENCE, near RAMSGATE.

W. H. BAIRD, *Secretary.*

MARSDEN HALL.

A PRIVATE ASYLUM for the Care and Treatment of a few Patients of both sexes suffering from Mental Disorders.

The grounds are extensive (seven acres), and of rare beauty, the views picturesque, and the situation specially healthy; farm attached. Only a limited number of Patients received. Home comforts.

Easy access from Nelson Station on the Lancashire and Yorkshire Railway; also from Colne on the Midland.

For Terms, &c., apply to Mrs. BENNETT, Widow of the late Proprietor, or to the MEDICAL SUPERINTENDENT,

MARSDEN HALL, NELSON, LANCASHIRE.

CAMBERWELL HOUSE,

TELEPHONE NO. 1037 **HOP**,

PECKHAM ROAD, CAMBERWELL.

(Within three miles of London and Westminster Bridges.)

CONSISTS of separate Houses and Buildings standing on nearly 20 acres of pleasure grounds, including large cricket ground, tennis courts and croquet lawns. Terms from 25s. to three guineas a week, according to the requirements of the case. Patients can also have separate sitting and bedrooms with special attendant, as well as the use of the general sitting rooms, and a change to the seaside during the summer. A certain number of Patients may be taken at reduced rates, at the discretion of the Medical Superintendent.

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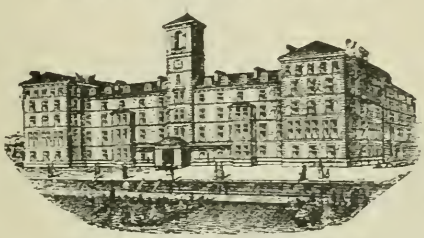

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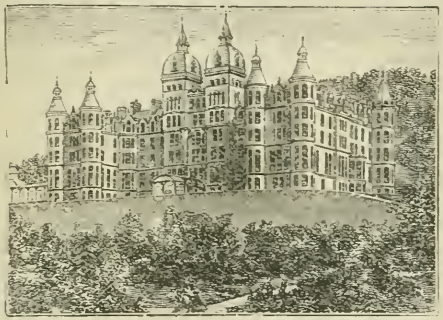

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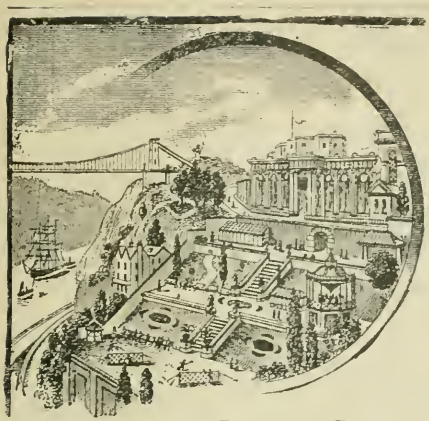
EXPERIENCED MASSEURS can be provided to attend upon Gentlemen at their own residence on application to the Secretary; or Gentlemen may be massaged at the Hammam without going into the Hot Rooms of the bath.

CAFE, OR RESTAURANT.

Breakfasts and Luncheons are served from 8 a.m., according to a fixed tariff. Oriental dishes are supplied. Coffee, Chocolate, Sherbet, Tobacco, and Light Wines are also sold during the hours the bath is open.

Hair Dressing Gallery in the Bath for the use of bathers.

Messrs. GREGORY & MACKINTOSH, Chiropodists, of 132*a*, Regent Street, have, for the convenience of Bathers, a private room in the Bath, where they are in attendance daily.



Clifton Grand Spa and Hydro,

CLIFTON, BRISTOL.

Beautifully situated on the brink of the Avon Gorge, 230 feet above the river, close to the Downs. Forming part with the establishment is a magnificent Pump Room, where Entertainments are held.

TURKISH AND RUSSIAN BATHS, AIX DOUCHES, NAUHEIM BATHS, MASSAGE, WEIR-MITCHELL CURE, GALVANIC AND FARADIC BATHS.

A complete installation of Dowsing's RADIANT HEAT AND LIGHT BATHS.

Bedrooms and corridors are kept at a uniform temperature in winter.

Electric Lighting; Hydraulic lift; good cuisine; Bowls, Billiards.

Golf Links near. Ready access to Bristol Channel Steamers.

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Hot Mineral Springs of Bath

Daily yield upwards of Half-a-Million Gallons at a Temperature ranging from 117° to 120° Fahr.

THE Natural Mineral Waters of Bath are proved by the record of centuries to be most efficacious in cases of **Rheumatoid Arthritis, Rheumatism, Gout in its various forms, Skin Affections, &c.**

The Corporation of Bath has expended large sums in developing these Baths and adopting every appliance known to modern Balneology. They are now in point of luxury and completeness **"the most perfect in Europe."**

Scientific application of the waters may be obtained, including the Nauheim or Thermal-soolbäd Treatment, the Aix System of Massage, the "Table" Aix Massage Douche, and Berthollet or Natural Vapour Baths. Inhalation and Pulverisation Rooms are also provided.

ELECTRIC HOT AIR BATHS (GREVILLE SYSTEM).

Letters to the Baths Manager will receive immediate attention.

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FOR POSITION—UNRIVALLED. FOR COMFORT AND CUISINE—UNEXCELLED.

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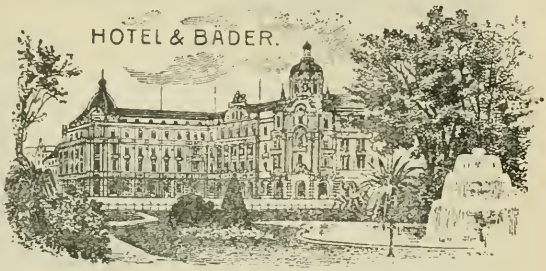

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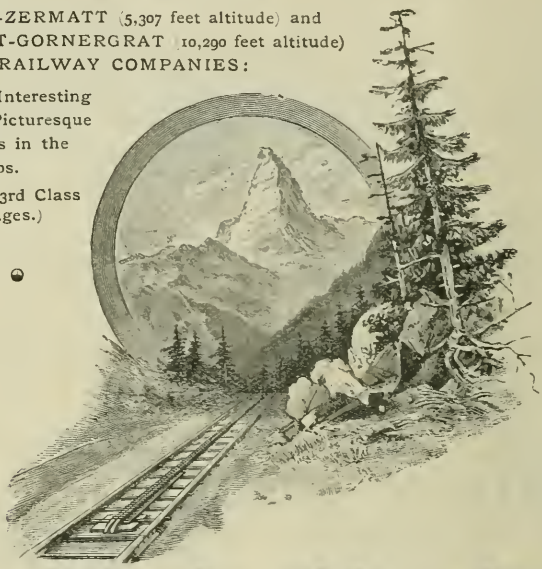

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We prepare the following formulæ:—

Ref. No.		Ref. No.	
A 2.	Acid Boric, 1 gr.	M 6.	Morphia, $\frac{1}{8}$ gr.
A 6.	Acid Carbolic, $\frac{1}{10}$ gr.	M 10.	Morphia, $\frac{1}{10}$ gr. and Cocaine. $\frac{1}{10}$ gr.
C 2.	Chinosol, $\frac{1}{2}$ gr.	M 14	Morphia, $\frac{1}{10}$ gr., Cocaine, $\frac{1}{10}$ gr. & Acid Boric, 1 gr.
C 6.	Cocaine, $\frac{1}{10}$ gr.	M 18	Morphia, $\frac{1}{10}$ gr. and Ext. Bellad., $\frac{1}{8}$ gr.
C 10.	Cocaine $\frac{1}{8}$ gr.	N 2.	Nepenthe = $\frac{1}{10}$ gr. Morphia.
I 4.	Iodoform, $\frac{1}{2}$ gr.	O 2.	Opium, $\frac{1}{8}$ gr.
L 2	Lead Acetate, $\frac{1}{2}$ gr.	O 6.	Opium, $\frac{1}{2}$ gr.
L 6.	Lead Acetate, $\frac{1}{2}$ gr. and Acid Boric, 1 gr.	Z 2.	Zinc Sulphate, $\frac{1}{2}$ gr.
L 10.	Lead Acetate, $\frac{1}{2}$ gr. and Opium, $\frac{1}{8}$ gr.		
M 2.	Morphia, $\frac{1}{10}$ gr.		

OTHER FORMULÆ PREPARED TO ORDER.

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"Will you please send me another two dozen of the Otoids I 4 (Iodoform) similar to "last. I am extremely pleased with them and have just treated two cases of troublesome "Otorrhœa of long standing with wonderful results

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Hospital Clinical Thermometers, Plain or Lens Front -	1	6
A.—Fannin & Co.'s **Clinical Thermometers,** any length, with Indestructible Index, 2½, 3, 3½, and 4 inches, in Metal Cases - - - - - - - -	2	0
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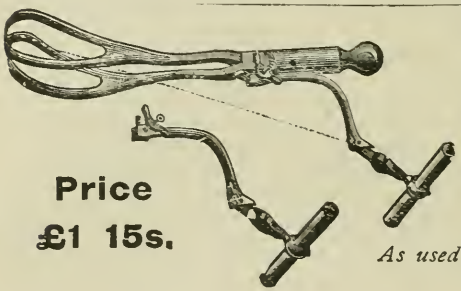

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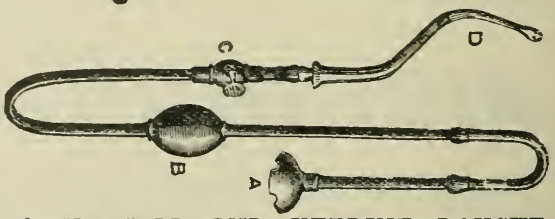

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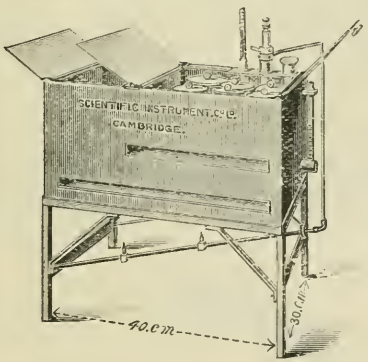

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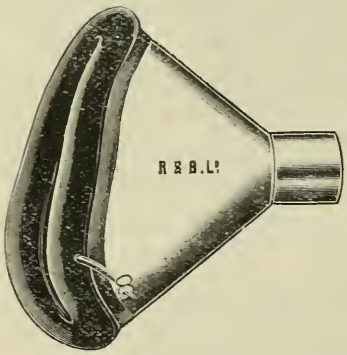

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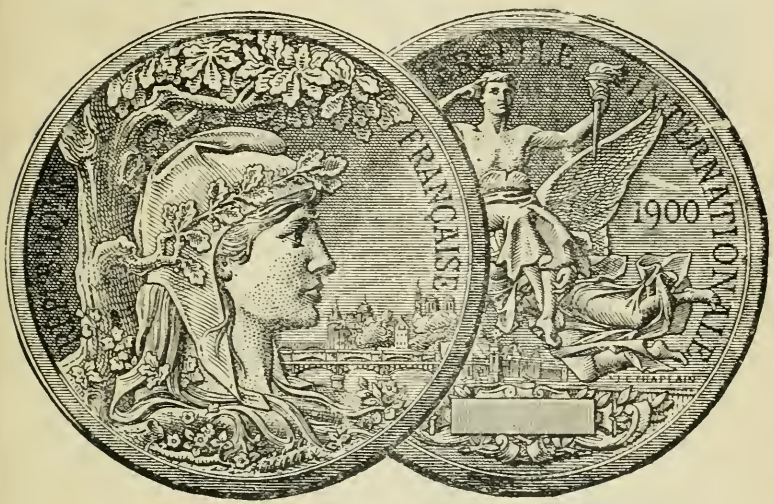

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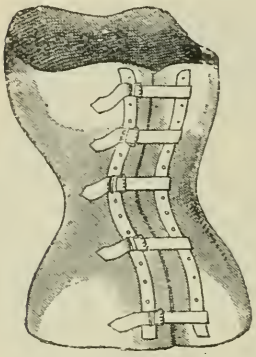

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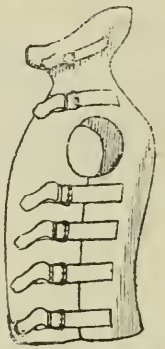

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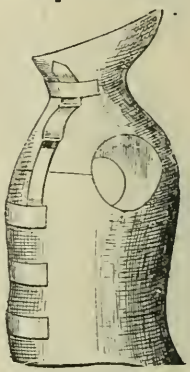

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Made with soft front or with hinge at back, and foot part if required.

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Length of splint as required.
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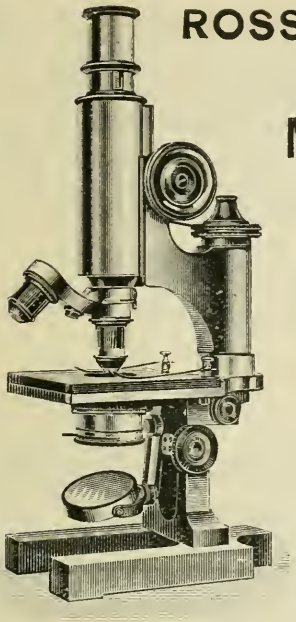

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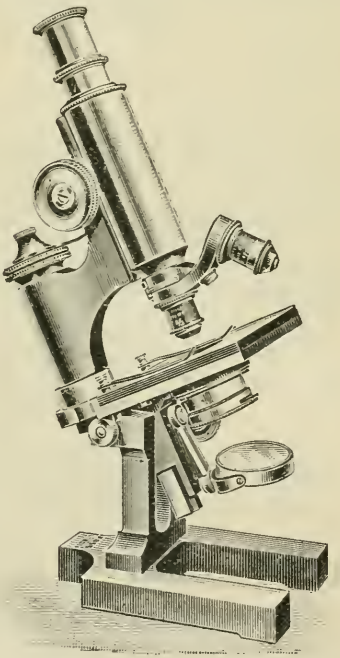

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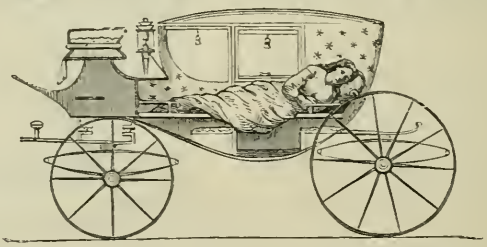

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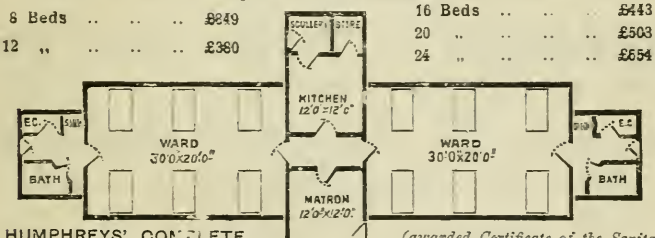

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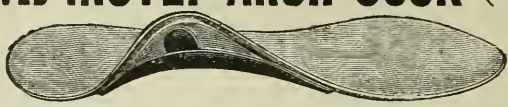

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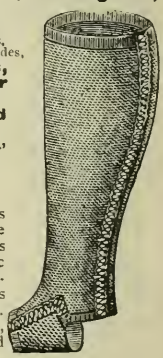

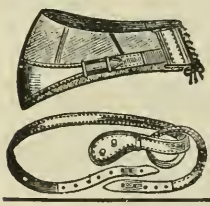

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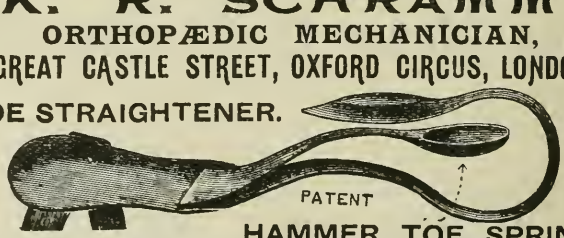

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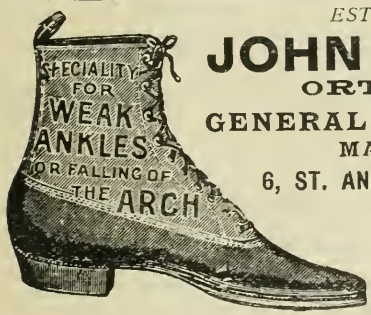

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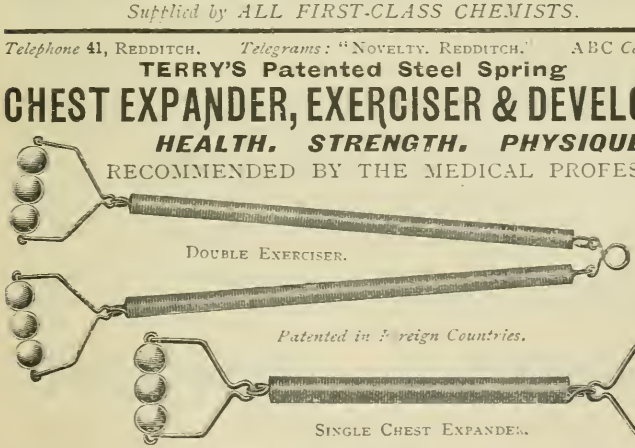

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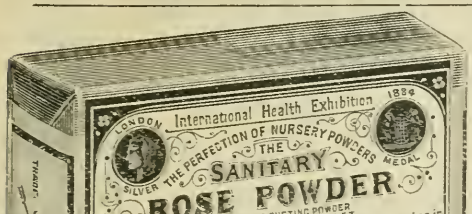

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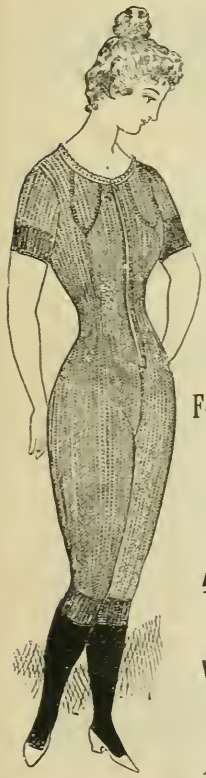

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Equal to proof spirit	14·81	11·89	7·80
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